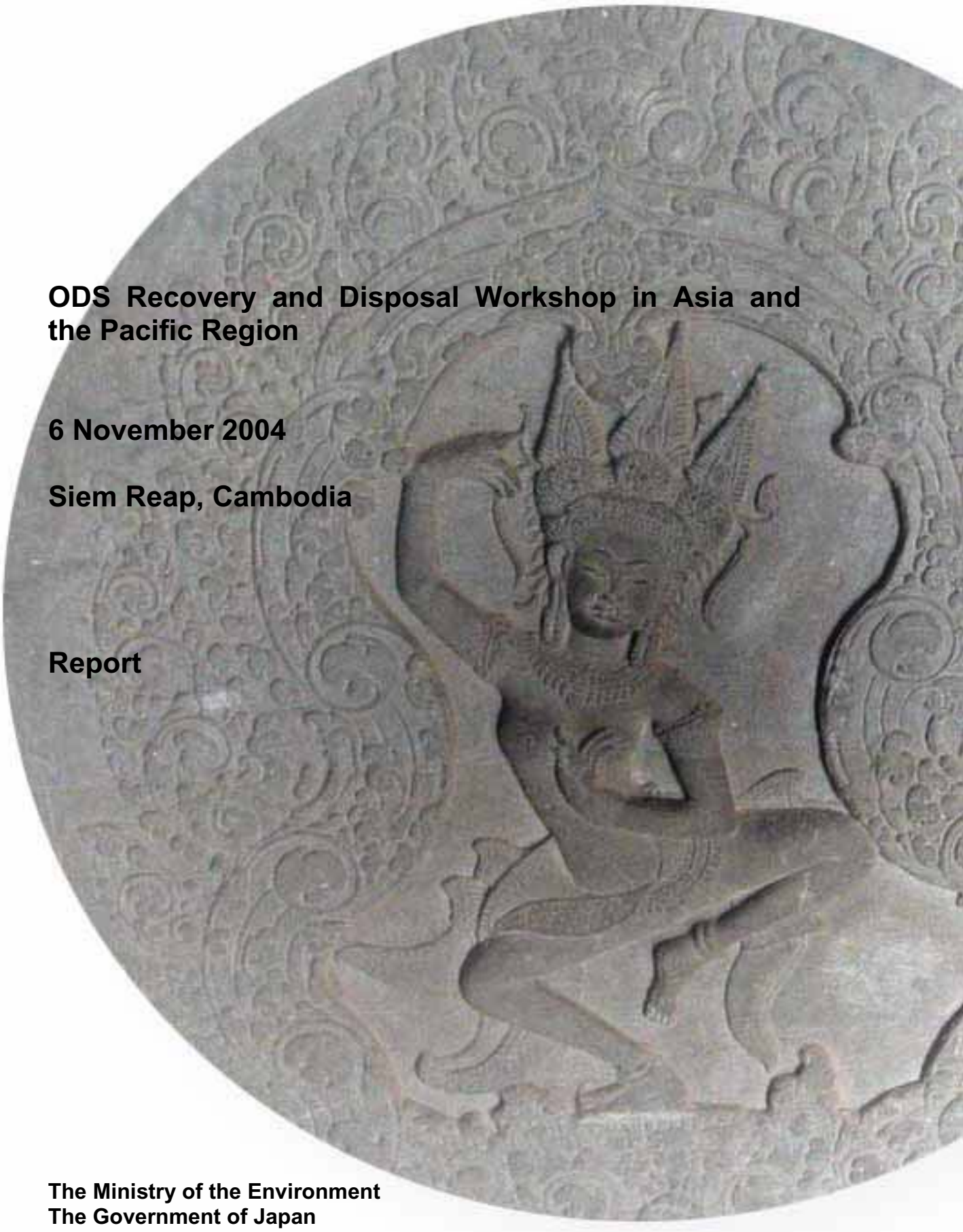

ODS Recovery and Disposal Workshop in Asia and the Pacific Region

6 November 2004

Siem Reap, Cambodia

Report

The Ministry of the Environment
The Government of Japan

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Foreword

The “Workshop on ODS Recovery and Disposal Workshop in Asia and the Pacific Region” was held in Siem Reap, Cambodia on 6 November 2004, organized by the Ministry of the Environment of Japan back-to-back with the UNEP Regional Network Meeting of South Asia Region (SA) and South-East Asia and the Pacific Region (SEAP) with assistance from the Cambodian Government and UNEP CAP.

Ozone officers in SA and SEAP regions, including the new officers of Bhutan and Afghanistan participated in the workshop together with representatives from Sweden, Australia, UNEP and UNIDO.

Information exchange and discussion were conducted on the current policies regarding ODS recovery and disposal in non-Article 5 countries and on the options for management of waste ODS to be explored in the future in Asian region.

The Ministry of the Environment, Japan (MOEJ) intends to continue a dialogue with Article 5 countries in the region and countries and organizations concerned on this issue and take the lead in exploring practicable options of waste ODS management.

MOEJ appreciates the collaboration of Australia, Cambodia, Sweden and UNEP in organizing the workshop.

Photos (omitted)

Photos (omitted)

1. Background

As a non-Article 5 member of Asia and the Pacific Region, the Ministry of the Environment of Japan has participated in discussion at the SA and SEAP regional networks; there has been several discussions in recent network meetings on a need of Article 5 countries to address the problem of disposal (including long-term storage and destruction) of contaminated CFCs that cannot be re-used, as is pointed out at the International Workshop on the Disposal of Ozone-Depleting Substances which was organized in 2000 by Canada, Switzerland, Australia and UNEP.

For example, in the 2003 Meeting of the South Asia Network of Ozone Officers (8-11 October 2003, Phuket), representatives of Singapore and Iran pointed out the need to take into consideration associated costs of transportation and destruction. Furthermore, in the Small Group Meeting of SA and SEAP Network of Ozone Officers on RMP Review and Update (13-14 June 2003, Dhaka, Bangladesh), need for "more information on reclamation and destruction technologies to address these issues in the future" was pointed out in the recommendations of the meeting.

At the last OEWG (24th OEWG, 13-16 July 2004, Geneva), similar opinions were expressed by Parties from other regions too; *inter alia*, the representative of Papua New Guinea, speaking on behalf of the Pacific Island Countries Region, mentioned the region's plan to establish a regional clean-up programme to address the problem of ozone-depleting substance waste. He also mentioned the usefulness of obtaining information on policies governing destruction technologies in other countries as well as on available funding from the Multilateral Fund (UNEP/OzL.Pro.WG.1/24/9).

It is now foreseeable that in the near future ozone officers will need to present their visions about how to deal with contaminated ODS. This issue will pose a new challenge of significance that relates to the very protection of the ozone layer.

With the above background, the MOEJ proposes to initiate the discussion on the issue of ODS recovery and disposal in this region, taking advantage of its own experience (as of 2004, Japan has 79 registered destruction plants) and a variety of technologies ranging from incineration technologies to plasma technologies, while seeking cooperation with other non-Article 5 members (e.g. Australia, Switzerland and Canada) involved in the region which have been actively concerned with this issue.

2. Objectives

- ✓ To invite National Ozone Units (NOUs) of Asia and the Pacific Region to assess the existing status of the policies and infrastructure for ODS recovery and disposal in the region

- ✓ To participate in a regional effort to identify an economically feasible regional mechanism/option for ODS disposal

- ✓ To share information on present achievements of and impediments to implementing ODS recovery and recycling as a basis for discussion.

- ✓ To start to collect and share the data and information that are necessary for economical and quantitative assessment of such options; and

- ✓ To share information on relevant policies regarding ODS recovery and disposal in the region, at different levels from the local level to the international level, and identify policy issues to be cleared.

3. Summary of Workshop

3.1 General

The workshop was attended by ODS Officers from Afghanistan, Bangladesh, Bhutan, China, India, Islamic Republic of Iran, Republic of Korea, Democratic People's Republic of Korea, Maldives, Mongolia, Nepal, Islamic Republic of Pakistan, and Sri Lanka of the South Asia Network and Cambodia, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam, Australia and Sweden of South-East Asia and the Pacific Network as well as representatives from UNEP CAP and UNIDO.

3.2 Opening Statements

The Director of Global Environmental Issues Division of the Ministry of the Environment of Japan, Mr. Shinichi Arai, on behalf of the MOEJ, formally opened the meeting. In his opening statement he introduced the history of legal instruments in Japan regarding recovery and destruction of fluorocarbons, touching upon the linkage with the Climate Change issues.

The Director General and Head of the National Ozone Unit of Cambodia, H.E. Dr. Lonh Heal, in his opening statement, stated that disposal of ODS is becoming one of the global concerns and that various options of dealing with this issue need to be studied.

3.3 Presentations

As the first presentation in the workshop, the overview of the past discussion on ODS recovery and dispoal was given by Mr Wataru Ono, a consultant to the Ministry of the Environment of Japan. The International Workshop on the Disposal of Ozone-Depleting Substances (Geneva, 2000) and other meetings where the issue was raised were quoted. In defining the scope of the workshop, it was emphasized that the focus of discussion should not be limited to a small group of options. Instead it was recommended that various options from long-time storage to destruction, which includes sub-options such as the construction of new facilities, utilization of the existing facilities that are used for other purposes, and export of ODS for destruction in other countries should be considered at the local, national, regional and international levels. It was clarified that the discussion of this sensitive issue in the workshop should not be construed as the endorsement of the Montreal Protocol Parties or ExCom members.

In the second presentation by Ms Junko Nishikawa of the Ministry of the Environment of Japan, detailed introduction and explanation about policies of Japan regarding the ODS recovery and disposal were provided. On the basis of estimated halon stock in Japan, the need for surplus halon destruction was introduced as the background information in relation to the fluorocarbon destruction policies of Japan. The history of the relevant legislation from the voluntary stage to the establishment of "Fluorocarbons Recovery and Destruction Law", "Home Appliances Recycling Law" and "Automobile Recycling Law" was given and the difficulties experienced in various stages were introduced.
The attention of the participants in the workshop was drawn to the linkage of ODS destruction with Greenhouse Gas (GHG) emission reduction, which was complemented with data on estimated trend of ODS/GHG-containing equipment and materials to be disposed of in the years to come in Japan.
As regards the export and import of ODS for destruction, the interpretation of the Basel Convention on this issue was provided to the effect that the Basel Convention should not be a problem to transporting ODS for destruction in the region; on the other hand, it was introduced that the existing trade control of Japan does not allow the import of any kind of ODS into Japan even if it is for destruction. It was also clarified that this is in fact not an intended prohibition on import of ODS for destruction in Japan; there is room for amendment if the substantial need for such transaction is confirmed.

In the third presentation, the Swedish and European experiences of reclamation and disposal of CFC were presented by Mr Klas Bergloef, a consultant to the Government of Sweden. In his presentation, cases of recovery, recycling and reclamation in Norway, Sweden and Australia were introduced with his analysis of advantages and disadvantages of these mechanisms.
Several recommendations were drawn from the international experiences in the introduced cases, including:

- The responsibility must be placed on industry;
- Inclusion of HCFC and HFC make interest long-term and justify investment;
- A legal requirement to create a level playing field is often necessary to get industry to invest; and
- A charge on the return of material will result in no return.

In the fourth presentation, Ms Mahani Taylor of the Department of Environment and Heritage of Australia provided information on the ODS recovery and disposal policies and mechanisms in Australia with emphasis on the cooperation between government and industry on this issue in Australia.
She introduced Australia's National Halon Bank with photographs of the facilities and data on so far destroyed CFC and halon and the estimated future disposal needs.
It was introduced that in the past 50 tonnes of ODS from New Zealand was destroyed in their facility and it was indicated that there is still the potential to increase the destruction capacity as necessary.
In closing the presentation, the Government of Australia offered to provide additional assistance in the development of ODS management strategies, in ODS reclamation and recycling, and in destruction of excess and contaminated ODS with invitation of those interested to visit the National Halon Bank for further information.

The fifth presentation was given by the RMP officer of UNEP/ROAP, Mr Shaofeng Hu, on the status of waste ODS management in this region. From the perspective of minimizing the waste ODS, potential causes of waste ODS were listed with suggestions of practicable measures to minimize the production of waste ODS. From the experience of RMP and other relevant MLF projects in the region, he pointed out that those MLF-funded projects do not address the disposal issue upfront except for China's phase-out strategy. He also clarified that even in the case of China the cost of disposal, which was originally proposed for funding, was rejected according to the current policies of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.
On the other hand, he shared his view that waste ODS does exist in the region but the quantities generated are not known.
He introduced some cases indicating disposal needs in the region, including Indonesia's case where 20 tons of contaminated CFC was recovered from a chiller and the plan of China to own their own ODS destruction facility in its CFC Phase-out Strategy in Refrigeration Servicing Sector.

In the last, sixth, presentation, Mr Fujio Okamoto of INEOS Fluor Japan, the resource person from Japan, made a succinct introduction to the technology used by the leading ODS destruction company in Japan with the history of how the private company got involved in the business and the records of past destruction operations.
He also introduced the overview of the fluorocarbon decomposition technologies used in Japan with advantages and disadvantages of each technology.
In addition, other reference data were given such the actual performance of the technology they use as compared to the UNEP guidelines and the operation cost of destruction facilities.
The perspective of the industry was provided in terms of ODS destruction as a business opportunity, the logistics system in operation from collection to destruction, the need for regulations as the driving force.
The presentation was concluded with introductions of Clean Development Mechanism (CDM) projects that are underway in the Republic of Korea and India with the involvement of the INEOS Group; the technologies of HFC-23 destruction in these CDM projects could be also applied for ODS destruction.

3.4 Discussion

<General>

- The Ministry of the Environment, Japan pointed out the need to have a comprehensive perspective in the discussion of waste ODS management, including but not limited to the option of destruction. It was also emphasized by participants from Japan Sweden, etc. that the establishment of legislative instruments and the involvement of the industry are essential factors;

- Officers of Article 5 countries and UNEP pointed out that information, whether quantitative or qualitative, is currently lacking as to how ODS is actually disposed of in their countries or in SA and SEAP regions. It is also pointed out that more technical and cost-related information on facilities for reclamation or destruction of ODS needs to be provided;

- The need to pay attention to the effect of CFC phase-out to be achieved according to the Montreal Protocol schedule and of the accelerated phase-out of production in China upon the future supply-demand balance and the prices of ODS in the market was pointed out in relation to the economic feasibility of recovery and destruction in the future.

- It was pointed out that the risk of mixture inherent in the recovery and recycling process has the potential of increasing the amount of un-reusable waste ODS.

- There was a general agreement that the destruction should be the last option and still that it is reasonable to start studying the issue of ODS disposal in this early stage in light of the lead-time that usually occurs before actions are taken and from the viewpoint of environmental impacts associated with released ODS.

<Policies>

- A representative of Bhutan expressed his wish that Japan should review its international trade policies so that it becomes possible to accept ODS for destruction when necessary.

- Australia stated that its policy of ODS disposal includes import of ODS from other countries for destruction in Australia and that it does have the experience of importing from New Zealand for the purpose of destruction.

<Options of ODS disposal>

- In the discussion, various options were suggested for consideration, mainly from an economic viewpoint, including the possibility of utilizing existing facilities such as solid waste incinerators and cement kilns and of exporting ODS to countries with ODS destruction facilities, as compared to the construction of new destruction facilities.

- The possibility of utilizing HFC destruction facilities that are being constructed under the CDM scheme of the Kyoto Protocol for destruction of ODS was suggested from the technical viewpoint.

- It was suggested that such a mobile reclamation system as is said to be in use in Australia could be carried to countries to collect ODS, instead of exporting ODS to disposal facilities in other countries.

<Cost-effectiveness>

- In non-Article 5 countries, it is estimated that in general the total cost for ODS destruction is than reclamation.

- The representative of Iran stated that the cost evaluation of destruction vis-à-vis storage should vary between countries or regions.

- It was suggested that HCFCs should also be taken into consideration in addition to CFCs in the discussion of cost-effective ODS destruction, since it is likely that the destruction of CFC alone will not make economical sense.

<RMP>

- The opinion was expressed that recovery and recycling should be promoted as the supply of CFC dwindles and the recovery gathers more momentum.

- Problems or difficulties confronted by many Article 5 countries in implementing ODS recovery, which is essential for waste ODS disposal, were pointed out and discussed. On the other hand, it was pointed out that the absence of a strategy to handle ODS that cannot be recycled or the inability of verifying the quality of recycled ODS are among the major drawbacks towards promoting good practice in the refrigeration industry.

- It was pointed out that the recovery and recycling system without options of final disposal is a dead-end cycle that cannot work, hindering the effectiveness of the entire recovery and recycling system.

- It was pointed out that the success of RMP projects, especially the recovery and recycling component, should not be measured against the amount of recovered CFC alone. The importance of RMP projects should also be evaluated qualitatively against the positive difference in the interest of NOUs of Article 5 countries; RMP, as the source of technical assistance NOUs can mobilize to complement the technical and economical impacts of regulatory measures upon the industry and end-users, makes it easier for them to persuade their domestic industry or end-users to accept regulatory measures.

- In relation to the recycling operation, attention was drawn to the fact that currently Article 5 countries use disposable cylinders in most cases, which are not suitable for long-time storage.

- It was pointed out that it is the key to promoting the recovery and recycling projects how to verify the quality of recovered/recycled ODS so that it can be placed in the market. Otherwise, the recovered/recycled substances will not be considered to be commercial products by consumers or engineers.

<"Dumping" of ODS-based equipment>

- It was pointed out that dumping of CFC-based second hand equipment causes lasting dependence on CFC import, thus negating the efforts in bringing down the consumption in a given country.

- It was pointed out that local companies converted to non-ODS technologies are facing an unfair competition in selling their ODS free products, bearing in mind that NOUs, Implementing Agencies and bilateral agencies tried hard to convince them to accept the assistance.

- It was pointed out that the availability of ODS-based second hand equipment has a negative impact on recovery and recycling projects since such

equipment do not need for the time being any servicing, and therefore existing equipment that could be serviced are just discarded as rubbish.

- Ms Maria Ujfalusi from the Swedish EPA informed the group that it is prohibited to export refrigerators and freezers containing CFCs out from the EC. Not only that, but also any other products and equipment containing CFCs, or whose continuing function relies on supply of CFCs are prohibited. Such cases if identified should be considered illegal.

4. Questionnaire

A questionnaire was distributed prior to the workshop to ozone officers in the region for the purpose of collecting the information that will indicate the present domestic needs of ODS disposal, the present availability of relevant information at the NOUs, the status of legislation related to ODS disposal in each country.
There were eighteen responses from Bangladesh, Cambodia, China, Fiji, Iran, R. Korea, Lao, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Indonesia and Viet Nam.

The information given in the questionnaire can be summarized as follows:

- The information on waste or unreusable ODS is not available at present at most NOUs in the region, because it is not required from the perspective of compliance with the Montreal Protocol with the use of CFC allowed until 2010. Neither is the system to have such information reported to the NOU available, although some NOUs suggested the need to have such system in the future or through the existing RMP scheme.
- There are some NOUs in the region that see emerging needs of ODS disposal, having actually been consulted on this issue by a government organization, private companies, or RMP officers.
- Most countries in the region have not prohibited any type of atmospheric release of ODS, except for the Republic of Korea, the Philippines, which recently prohibited the intentional release of ODS into the atmosphere, and Fiji, which has been prohibiting the ODS release to the environment with penalties since 1998.
- Most countries in the region have never considered having ODS destruction facilities, assuming that the cost is prohibitive and the technology is not available for Article 5 countries; on the other hand, there are some countries that have started to consider the possibility of having a destruction facility or already have a destruction plan in its sector plan.
- In most countries in the region, the transport of ODS between countries for destruction is possible under the current legislation.
- More information is necessary to determine the extent and degree of the issue in the region.

	Do you have any information on contaminated/unusable ODSs in your country? For instance, did any one contact your NOU for consultation as to ODS disposal? What was your response?	Is there any report system of the amount of recovered/stocked ODSs in your country?	In your country, is the deliberate atmospheric release of ODS legally prohibited or is such regulation under consideration?	Is there any possibility to utilize the existing cement kilns/rotary kiln factories, etc. to destroy wasteODS in your country?	Is it legal to export ODS for destruction in your country?	Does your country have any plan to destroy ODSs?	Any other comments/observation concerning ODS disposal issue?
Bangladesh	Not yet reported any contaminated ODS in the country. Nobody contacted for ODS disposal.	We quarterly report to UNOPS about recovery & recycling under R & R project activity.	We have ODS rules enacted in April 2004. But that have no restriction on ODS emission. In course of amendment we will incorporate mandatory Recovery facilities for service centre. For that we are considering to prepare Code of Practice for Refrigeration technician. Also we are importing recovery kits for service centres under National ODS Phase-out Plan.	We have a cement kiln but technology of destruction is not known.	Our ODS rules have no provision of export of any types of ODSs.	Not yet planned.	We are eager to recycle/reclaim CFCs for further use. Assistance for destruction may be needed after 2006. Training on destruction or field visit of responsible ODS officer will be helpful to introduce destruction facilities in Bangladesh.
Cambodia	Not yet	Not yet	Will be legally prohibited after the Sub-decree on ODS Management next year.	Not applicable yet in Cambodia	Not yet	We do not yet have the recovery and recycling machines for ODS	In case Cambodia has, we would like to consult with you as well as UNEP how to destroy the ODS.
China	No, we haven't any information on contaminated ODS in China. Nobody contacted us for consultation as to ODS disposal.	No, we haven't established the report system of the amount of recovered ODS in China at present.	It's under consideration for the release of ODS. We haven't formulated and issued relevant regulations for prohibition of the release of ODS at present.	We still haven't done any work to explore the possibility of using such options to destroy ODS waste in China. One case is to incinerate CTC in the incineration station for hazardous wastes.	No policy measure for the above issue has been proposed. So it's legal to export ODS for destruction in China presently.	Yes. In the Refrigeration Servicing Sector CFC Phase-out Plan, there is action plan on destruction of ODS which can not be reclaimed.	The destruction of CFCs in conjunction with setting up of national reclamation/disposal facilities, can promote recovery.

Fiji	Yes. Descem is a company in Australia which the Fiji NOU has been in touch with since 1999. Dascem was willing to destroy ODS for Fiji provided some costs are subsidized.	Yes, as from 29th June 2003 to 26th April 2004, 786.80 kg of R12 has been recovered and are currently stored at our three R&R centres. The inventory of the R&R centre are done on a half-yearly basis.	It is illegal to deliberately release ODS in the atmosphere. Section 18 (4) of the ODS Act 1998 states: (4) A person who discharges or releases, or caused or permits the discharge or release of any controlled substance into the environment, commits an offence and is liable on conviction to the penalties provided in Part V.	Yes, it is possible however this will require proper consultation with the respective company directors. The destruction activity should not affect the production work at the factory.	It is illegal to export ODS in Fiji. However a licence or permit can be issued if ODS is brought for destruction.	Yes, we are exploring the possible options for destruction. Probably a bilateral agreement with countries with destruction facilities.	Disposal of ODS will be a very long-term project. <Difficulties faced> High cost involved in destruction. Technologies are not accessible due to the costs involved. Time is required to develop good strategies to address this issue.
Iran	Ministry of petroleum in converting to non-ODS technology needs assistance to recovery / recycling /destruction ODS such as Halon and CFC-12.	Is being established	Under consideration	Yes	No	Yes , under RMP	Cost is too high / technology not available as yet
Lao DPR	We don't have any contaminated ODS in Lao PDR.	We have data report system on annual imported ODSs.	It's under consideration.	We don't have any waste ODS.	It's prohibited to import any waste to my country for destruction. We have decrees and regulations on control of import, expert and use of ODSs, and will phase out ODS in the year 2010.	No, we don't.	Lao PDR imports only refrigerants for the cooler machine sector.
Korea, R.	I have never been received such contact because we can use ODS until 2010.	We have not have reporting system on amount recovered and recycled ODSs yet. But I think that we need to amend legislation to report them.	It is legally prohibited to intentionally release ODS to atmosphere under our regulation "the guidance for prohibition of release and rationalization of ODS"	As you know we have no officially approved destruction facility of ODS. But we have one destruction facility in part of private sector, which is established by funding assistance such as CDM project. So I think that we can use this facility to destroy ODS in future.	Yes, both import and export ODS for destruction is legal under law. But importer and exporter need to get a license from the Ministry of Environment.	I think maybe we need to destroy ODSs that recovered and co-produced product such as CTC after 2007 or 2010.	Firstly, making guidance on release to atmosphere from destruction facility is most important.
Malaysia	No	No	Legally Prohibited	No	No	No	No

	Do you have any information on contaminated/unusable ODSs in your country? For instance, did any one contact your NOU for consultation as to ODS disposal? What was your response?	Is there any report system of the amount of recovered/stocked ODSs in your country?	In your country, is the deliberate atmospheric release of ODS legally prohibited or is such regulation under consideration?	Is there any possibility to utilize the existing cement kilns/rotary kiln factories, etc. to destroy waste ODS in your country?	Is it legal to export ODS for destruction in your country?	Does your country have any plan to destroy ODSs?	Any other comments/observation concerning ODS disposal issue?
Maldives	No one contacted us.	No	Legally not prohibited (no laws on that)	Not applicable	Yes, legal	Not now. Maybe the need may rise in the future.	Existing technologies, feasibility of destruction in small quantities are not well studied; such studies are very important. Transportation cost from country to country is important. Is it cost effective?
Mongolia	3.7 tons of ODS is being kept in reserve for the state reserves in Argroimpex Co., Ltd.	Yes, there is a report system of the amount of recovered ODS. Within the framework of the Recovery &Recycling Project MON/02/G61, Prof. Mangaljalav, National Consultant for R&R project implementation and monitoring has been collecting data for every three months and reporting to the UNDP/UNOPS. Total amount of recovered ODS is 2267 kg from 1 April 2003 to 1 April 2004.	N/A	N/A	N/A	N/A	N/A

Myanmar	There is no information as yet on contaminated/unusable ODSs in Myanmar.	There is no report system of the amount of recovered/ stocked ODSs as yet in Myanmar.	As a low volume ODS consuming country (LVC), the problem of deliberate atmospheric release of ODS is not relevant in case of Myanmar.	It is not used to destroy ODS waste as yet in Myanmar.	It is not banned to export ODS for destruction from Myanmar.	There is no plan as yet to destroy ODSs.	There is no comment to be made concerning ODS disposal issue.
Pakistan	No information is available or reported on contaminated /unusable ODSs in the country at this time. Since ODSs are still in use, nothing is unusable. No one has contacted the Ozone Cell regarding the matter. However, during the recent training under RMP, the participants asked questions regarding ways and means of destruction. This issue will be more pronounced as use of ODS is phased out further and unusable stocks become available.	There is no system available in Pakistan for the recovery and stocking of ODSs. The system will be provided under RMP in 2005.	There is no legal prohibition for the deliberate atmospheric release of ODSs because the recovery systems are not available. Government of Pakistan is considering issuance of necessary notification after the availability of the R & R system.	It is possible but to do so however, in this regard, the awareness of the administration of the factories would be required to make them realize that with such activity neither the quality of the cement would not be affected nor economic cost added.	No such legislation is available. Pakistan is not manufacturing ODSs but actually meets its requirement through import from other countries.	Ozone Cell is planning to utilize the maximum quantity of ODS by Reclaim/Recycling/Reuse system with ban on import in parallel. It is envisaged that with proper reclaim/recycling/reuse procedure there will still be a need for the use of ODS even after 2010 for a large number of uses. Apparently, the destruction would not be required but even if destruction is required, Ozone Cell would try to opt for a system which is economically feasible and environmental friendly and suitable to local conditions.	The disposal of ODS should only be the last solution. Each country should develop and plan for R & R system with parallel introduction of licensing/quota system and ban on the import.

	Do you have any information on contaminated/unusable ODSs in your country? For instance, did any one contact your NOU for consultation as to ODS disposal? What was your response?	Is there any report system of the amount of recovered/stocked ODSs in your country?	In your country, is the deliberate atmospheric release of ODS legally prohibited or is such regulation under consideration?	Is there any possibility to utilize the existing cement kilns/rotary kiln factories, etc. to destroy waste ODS in your country?	Is it legal to export ODS for destruction in your country?	Does your country have any plan to destroy ODSs?	Any other comments/ observation concerning ODS disposal issue?
Philippines	Yes. Mostly halon end-users. We provide them the following advises: a. Bring the ODS to the Halon Bank (Halon Recovery and Recycling Project under UNDP) for recovery and recycling with the end in view of collecting and storing them for prospective critical uses in the Philippines. b. Recover and temporarily store them in their location. c. Return back to the supplier for destruction in other countries with available destruction facilities. d. Bring them to the service shops equipped with recovery and recycling equipment for them to recover, recycle and re-use.	None at the moment. However, as soon as the Voucher System of the NCPP is implemented, all service shops that availed themselves of the grant assistance (tools and equipment for service shops) will be required to submit reports on the recovered/stocked CFCs to the DENR-EMB.	Intentional release/venting of ODS when servicing equipment is prohibited, under the Revised Chemical Control Order (CCO) for Ozone Depleting Substances (ODS) issued Aril 2004. Such violations will constitute grounds for cancellation of certificates. (Registration of importers, dealers, retailers and resellers; accreditation of service shops; and competency of technicians.) Furthermore, under the NCPP, a reclamation scheme/facility will be established to support the anti-venting regulations of the Philippine Department of Environment and Natural Resources.	None at the moment. However, there is an on-going pilot study between Department of Science and Technology (DOST) and Department of Environment and Natural Resources (DENR) on using wastes (oil, solvents, diapers, etc.) as alternative fuel/raw materials.	Yes, as long as there is a transmittal of notification to the transit countries and the country of destination. The official consent of the countries will be the basis of the Philippine Government to issue Export Clearance to the company requesting to export.	Yes, if there is an assurance that it does not create negative impacts to the environment and of course, if our Government can afford to put up destruction technology or equipment. However, under the NCPP, an on-going "Reclamation Scheme/Facility of used CFCs" will be established to support the anti-venting regulation of the Government; to promote use of reclaimed CFC; and to ensure proper disposal of contaminated CFCs.	N/A

Singapore	No. However companies will be advised to source for appropriate ODS destruction facilities overseas and applications on such exports of ODS waste will be handled on a case-by-case basis.	No	Currently there are no prohibitions on the atmospheric release of ODS. However the industry follows closely with the ASHRAE standards for refrigerant management.	No	No	Not at this point of time.	No
Sri Lanka	No	There is a data reporting system for recovered CFC under the recovery and recycling programme. But there is no method of data reporting for other recovered ODSs and stocked ODS.	No	Not studied yet.	Yes	No	In the future there can be situations that recovered ODSs cannot be used due to contamination. Then we may export such ODSs to countries where destruction facilities are available. Otherwise we need the destruction facility with in the country.
Indonesia	Two contractor servicing companies contacted NOU to get recommendations to do CFC replacement in an oil company as a bidding requirement. We asked the contractor to provide detail ed information of planed actions in replacing and disposing the refrigerant. They planned to send contaminated CFC to Australia for destruction. We suggested them to find other alternatives rather than to export and destroy contaminated CFC in other country (such as recycle).	N/A	No, but considered to be included in the revised regulation	Yes.	N/A	N/A	N/A

	Do you have any information on contaminated/unusable ODSs in your country? For instance, did any one contact your NOU for consultation as to ODS disposal? What was your response?	Is there any report system of the amount of recovered/stocked ODSs in your country?	In your country, is the deliberate atmospheric release of ODS legally prohibited or is such regulation under consideration?	Is there any possibility to utilize the existing cement kilns/rotary kiln factories, etc. to destroy waste ODS in your country?	Is it legal to export ODS for destruction in your country?	Does your country have any plan to destroy ODSs?	Any other comments/observation concerning ODS disposal issue?
Nepal	No	Yes	Under consideration	No	No	No	Excess CFC from the seized quantity is creating a problem. As re-export is banned in Nepal, we have excess 7.9 kg of CFC from stock.
Vietnam	We have information on the recovered amount of CFC provided by the servicing workshops under the monitoring programme; however, no one expressed interest in ODS disposal.	A monitoring local consultant assigned by NOU and sponsored by UNDP is responsible for collecting information of the recovered amount of CFC.	At present, there is no regulation to prohibit the ODS emission.	There are several cement factories in the country; however the possibility of using these facilities to destroy ODS is not yet considered.	This case should be considered as legal.	The destruction of ODS in not planned and maybe for long time ahead	As my understanding, in the South East Asia countries, there is no destruction facility and this issue has been mentioned several times at the network meeting and there was no decision approved.

5. Future Actions

This workshop marks the initiation of dialogue and effort in Asia and the Pacific Region to find practicable solutions to the emerging issue of ODS disposal.
The information provided and discussion made for this workshop are of great significance in identifying the status of the issue at this stage and directing future actions to prepare for this issue in proactive manners. A wide range of potential solutions were discussed and issues to be taken into consideration in choosing the most viable option at national, regional and global levels were pointed out.
However, the result of the workshop reiterates the lack of sufficient and detailed information and stresses the need to continue, or start, to collect such data for analysis before making a logical choice among these options.

In this recognition, the Ministry of the Environment, Japan will continue to have dialogue with this region and individual countries not only to make itself ready to provide necessary assistance from its own experiences but also to strengthen the concerted efforts with other countries in the region for the protection of the ozone layer.

6. Annexes

Annex I. Contact details of participants

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Annex II. Agenda

ODS Recovery and Disposal Workshop in Asia and the Pacific Region

Siem Reap, Cambodia, 6 November 2004

AGENDA

09:00 – 09:15	Opening statement - Mr Shinichi Arai, Director, Global Environmental Issues Division The Ministry of the Environment, Japan - Mr Lohn Heal, Department of Pollution Control, Ministry of Environment, Cambodia
09:15 – 9:45	Overview of the past discussion on ODS recovery and disposal ➢ Defining the scope of the workshop Mr Wataru ONO, Consultant
9:45－10:15	ODS recovery and disposal policies and mechanisms Case of Japan ➢ Cases of disposal needs ➢ Framework of Fluorocarbons Recovery and Destruction Law ➢ Linkage with Greenhouse Gas emissions ➢ ODS transfer for destruction in relation with the Basel Convention/domestic trading rule Ms Junko Nishikawa, The Ministry of the Environment, Japan
10:15 – 10:30	Coffee break
10:30 – 11:00	ODS recovery and disposal policies and mechanisms Cases of Sweden and EU ➢ Policy and mechanisms of ODS recovery and disposal in Sweden and EU Mr Klas Berglöf, Consultant, Sweden

11:00 – 11:30	ODS recovery and disposal policies and mechanisms Case of Australia ➢ Cases of disposal needs (domestic and international) ➢ Policy and mechanisms of ODS recovery and disposal in Australia ➢ Policy of importing ODS for destruction Ms Mahani Taylor, Department of Environment and Heritage, Australia
11:30 – 12:00	Summary of the morning session and Discussion
12:00 – 13:30	Lunch break
13:30 –14:00	Status of policies and mechanisms for ODS recovery and disposal of waste ODS management in the region ➢ Current status of disposal of waste ODSs in the region / management of contaminated ODSs on the RMP implementation in the region ➢ Case of disposal needs in the region ➢ Options of exporting ODS for destruction or long-term storage in the region UNEP CAP officer (to be confirmed)
14:00－14:30	Technical trend on ODS destruction facilities and operation in Japan ➢ Overview of ODS destruction facilities in Japan ➢ Destruction performance by INEOS Fluor Japan (capacity, cost etc.) ➢ Rational for ODS destruction from the view point of a business organization ➢ CDM-based HFC destruction facilities in the region and future developments Mr Fujio Okamoto, INEOS Fluor Japan
14:30 – 15:00	Coffee break
15:00 －16:00	Discussion

Opening Statement by Mr. Shinichi Arai, Director of Global Environment Issues Division, Ministry of the Environment, Japan

Your Excellency Dr. Lonh Heal, Director General of Ministry of Environment of Cambodia,

Mr. Rajendra Shende, Head of Energy and OzonAction Branch, UNEP Division of Technology, Industry and Economics (DTIE),

Distinguished participants from National Ozone Units (NOUs),

Ladies and Gentlemen,

It is my great pleasure to have the privilege of making an opening statement on the occasion of the ODS Recovery and Disposal Workshop here in Cambodia. On behalf of the Government of Japan, I would like to express our gratitude to all the NOUs, in particular the Government of Cambodia and UNEP, for giving us the precious opportunity to organize this workshop. We couldn't have succeeded in holding this workshop without your great contribution. In addition, I deeply appreciate the attendance of Mr. Klas Berglöf from Sweden, Ms Mahani Taylor from Australia, and Mr. Fujio Okamoto from Japan in the workshop and expect that we can have their valuable inputs to the workshop.

The Montreal Protocol was the forerunner of international conventions for protecting the global environment. It has been quoted as a "success story" and provided a model for various international environmental agreements. However, I think, now that the Protocol has entered the phase of universal implementation and compliance, its real success is now being challenged and it does literally depend upon us.

In order to ensure or accelerate the phase-out of CFCs and the smooth conversion to alternative substances in various sectors, the recovery and recycling systems are indispensable as long as we have remaining CFC-dependent equipment. However, in the process of recovery and recycling, we frequently confront with the difficulty with contaminated or unusable ODSs. I am afraid that the absence of policies to manage so called "waste ODS" could be an obstacle to the implementation of successful ODS phase-out.

In Japan, we enacted the fluorocarbons recovery and destruction law in the year 2001. The law requires the collection of fluorocarbons from specified equipment and the recycling and destruction of the collected fluorocarbons. In addition, the law targets not only ozone depleting fluorocarbons but also HFCs as the substances that must be collected. As you know, HFC has the global warming potential which is tens of thousands times stronger than that of CO2, and needs to be reduced under the Kyoto Protocol of UNFCCC. Now under the increasing possibility of the Kyoto Protocol coming into effect shortly, we are to reach the actual stage for harmonizing the two approaches to the protection of our globe.

We should fully understand here that if developing countries are to proactively comply with their own obligations under the Montreal Protocol, they are faced with daunting tasks for sustainable development to maintain the economic and social growth. In order to support developing countries in this process, the international community should provide them with adequate technical as well as financial assistance on a practical basis, with a view to sharing the experience and knowledge in all relevant sectors and countries.

I believe the experience and expertise of Japan and other developed countries in the field of ODS recovery and disposal, which will be provided at this workshop, could provide useful lessons in developing future framework of waste ODS management in the developing countries. I hope that today's workshop with the attendance of all the NOUs in the region, other developed countries, and implementing agencies marks a milestone in our concerted efforts for the protection of ozone layer including ODS disposal in the region.

I hereby would request your active participation and discussion in the workshop. Thank you very much.

Address by H.E. Dr Lonh Heal, Director General, Head of National Ozone Unit

Good morning, distinguished guests, ladies and gentlemen. Welcome to the ODS Recovery and Disposal Workshop in Asia and the Pacific Region. On this special event in Cambodia, I would like to warmly welcome all participants from countries in South East Asia and South Asia and the Pacific, UNEP, UNIDO, and other organizations who kindly participate in this very important workshop; especially the Government of Japan for making such important workshop possible in Cambodia.

It is a great pleasure that Cambodia is hosting such an important workshop here in the world heritage location. As we have foreseen, the concern of the disposal of ODS is becoming one of the global concerns as some of ODS have to be phased out in the next five year; therefore, the concern may be the recovery and disposal of such substances. In connection with this concern, we hope that this workshop will provide us with the broad ideas how to deal with problems and to reduce the concerns on the ozone layer depletion. In this connection, as we are in the world heritage place; therefore, some people that have not had a chance to visit Angkor, we would like to encourage you to spend your time to visit Angkor and from that hope you will see what are different from others.

In conclusion, I would like to express my sincere thanks and appreciation to the Government of Japan for selecting our country as the gathering place for this event of the Ozone Officers from South Asia and the Pacific, South Asia, Australia, Japan, Sweden, and organizations like UNEP, UNIDO, and World Bank and a professor from the Asian Institute of Technology. I would also like to thank my staff for their efforts and assistance in organizing this workshop. And many thanks to our colleagues from the countries in the regions, university and organizations

for your participation in this important workshop. Let me wish you all a great success and declare this workshop open.

Thank you.

Annex IV. Presentation Slides

Presentation 1. Overview of the past discussion on ODS recovery and disposal

(Presentation Slides are omitted from this digital document since they may contain confidential information)

Annex V. Past MOP decisions and comments on ODS recovery and disposal

1. The Montreal Protocol

- The 6th paragraph of the preamble

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations and bearing in mind the developmental needs of developing countries,

- The 9th paragraph of the preamble

Considering the importance of promoting international co-operation in the research, development and transfer of alternative technologies relating to the control and reduction of emissions of substances that deplete the ozone layer, bearing in mind in particular the needs of developing countries,

2. Decisions adopted by the Meeting of the Parties to the Montreal Protocol

- Decision I/12F: Clarification of terms and definitions: Destruction

The First Meeting of the Parties decided in Dec. I/12F with regard to destruction:

(a) to agree to the following clarification of the definition of Article 1, paragraph 5 of the Protocol:
" a destruction process is one which, when applied to controlled substances, results in the permanent transformation, or decomposition of all or a significant portion of such substances";

(b) to request the Panel for Technical Assessment to address this subject for the Parties to return to it at its second and subsequent meetings with a view to determining whether it would be necessary to have a Standing Technical Committee to review and recommend for approval by the Parties methods for transformation or decomposition and to determine the amount of controlled substances that are transformed or decomposed by each method.

- Decision II/11: Destruction technologies

The Second Meeting of the Parties decided in Dec. II/11 with regard to destruction technologies to establish an Ad Hoc Technical Advisory Committee on Destruction Technologies and to appoint its Chairman, who shall appoint in consultation with the Secretariat up to nine other members on the basis of nomination by Parties. The members shall be experts on destruction technologies and selected with due reference to equitable geographical distribution. The Committee shall analyze destruction technologies and assess their efficiency and environmental acceptability and develop approval criteria and measurements. The Committee shall report regularly to meetings of the Parties.

- Decision III/10: Destruction technologies

The Third Meeting of the Parties decided in Dec. III/10 to note the constitution of the Ad Hoc Technical Advisory Committee on Destruction Technologies, established by the Second Meeting of the Parties, and to request the Committee to submit a report to the Secretariat for presentation to the Fourth Meeting of the Parties, in 1992 at least four months before the date set for that meeting;

- Decision IV/11: Destruction technologies

The Fourth Meeting of the Parties decided in Dec. IV/11:

1. to note the report of the Ad Hoc Technical Advisory Committee on Destruction Technologies and, in particular, the recommendations contained therein;

2. to approve, for the purposes of paragraph 5 of Article 1 of the Protocol, those destruction technologies that are listed in Annex VI to the report on the work of the Fourth Meeting of the Parties which are operated in accordance with the suggested minimum standards identified in Annex VII to the report of the Fourth Meeting of the Parties unless similar standards currently exist domestically;

3. to call on each Party that operates, or plans to operate, facilities for the destruction of ozone-depleting substances:
   (a) to ensure that its destruction facilities are operated in accordance with the Code of Good Housekeeping Procedures set out in section 5.5 of the report of the Ad Hoc Technical Advisory Committee on Destruction Technologies, unless similar procedures currently exist domestically; and

   (b) for the purposes of paragraph 5 of Article 1 of the Protocol, to provide each year, in its report under Article 7 of the Protocol, statistical data on the actual quantities of ozone-depleting substances it has destroyed, calculated on the basis of the destruction efficiency of the facility employed;

4. to clarify that the definition of destruction efficiency relates to the input and output of the destruction process itself, not to the destruction facility as a whole;

5. to request the Technology and Economic Assessment Panel, drawing on expertise as necessary:
   (a) to reassess ozone-depleting substances destruction capacities;

   (b) to evaluate emerging technology submissions;

   (c) to prepare recommendations for consideration by the Parties to the Montreal Protocol at their annual Meeting;

   (d) to examine means to increase the number of such destruction facilities and making available the utilization to developing countries which do not own or are unable to operate such facilities;

6. to list in Annex VI to the report on the work of the Fourth Meeting of the Parties approved destruction technologies;

7. to facilitate access and transfer of approved destruction technologies in accordance with Article 10 of the Protocol, together with provision for financial support under Article 10 of the Protocol for Parties operating under paragraph 1 of Article 5.

➢ Decision IV/12: Clarification of the definition of controlled substances

The Fourth Meeting of the Parties decided in Dec. IV/12:

1. that insignificant quantities of controlled substances originating from inadvertent or coincidental production during a manufacturing process, from unreacted feedstock, or from their use as process agents which are present in chemical substances as trace impurities, or that are emitted during product manufacture or handling, shall be considered not to be covered by the definition of a controlled substance contained in paragraph 4 of Article 1 of the Montreal Protocol;

2. to urge Parties to take steps to minimize emissions of such substances, including such steps as avoidance of the creation of such emissions, reduction of emissions using practicable control technologies or process changes, containment or destruction;

3. to request the Technology and Economic Assessment Panel:
   (a) to give an estimate of the total emissions resulting from trace impurities, emission during product manufacture and handling losses;

   (b) to submit its findings to the Open-ended Working Group of the Parties to the Montreal Protocol not later than 31 March 1994.

➢ Decision IV/24: Recovery, reclamation and recycling of controlled substances

The Fourth Meeting of the Parties decided in Dec. IV/24:

1. to annul decision I/12 H of the First Meeting of the Parties, which reads "Imports and exports of bulk used controlled substances should be treated and recorded in the same manner as virgin controlled substances and included in the calculation of the Party's consumption limits";

2 not to take into account, for calculating consumption, the import and export of recycled and usedcontrolled substances (except when calculating the base year consumption under paragraph 1 of Article 5 of the Protocol), provided that data on such imports and exports are subject to reporting under Article 7;

3. to agree to the following clarifications of the terms "recovery", "recycling" and "reclamation":
   (a) Recovery: The collection and storage of controlled substances from machinery, equipment, containment vessels, etc., during servicing or prior to disposal;

   (b) Recycling: The re-use of a recovered controlled substance following a basic cleaning process such as filtering and drying. For refrigerants, recycling normally involves recharge back into equipment it often occurs "on-site";

   (c) Reclamation: The re-processing and upgrading of a recovered controlled substance through such mechanisms as filtering, drying, distillation and chemical treatment in order to restore the substance to a specified standard of performance. It often involves processing "off-site" at a central facility;

4. to urge all the Parties to take all practicable measures to prevent releases of controlled substances into the atmosphere, including, inter alia:
   (a) to recover controlled substances in Annex A, Annex B and Annex C of the Protocol, for purposes of recycling, reclamation or destruction, that are contained in the following equipment during servicing and maintenance as well as prior to equipment dismantling or disposal:
   (i) stationary commercial and industrial refrigeration and air conditioning equipment;
   (ii) mobile refrigeration and mobile air-conditioning equipment;
   (iii) fire protection systems;
   (iv) cleaning machinery containing solvents;

   (b) to minimize refrigerant leakage from commercial and industrial air-conditioning and refrigeration systems during manufacture, installation, operation and servicing;

   (c) to destroy unneeded ozone-depleting substances where economically feasible and environmentally appropriate to do so;

5. to urge the Parties to adopt appropriate policies for export of the recycled and used substances to Parties operating under paragraph 1 of Article 5 of the Protocol, so as to avoid any adverse impact on the industries of the importing Parties, either through an excessive supply at low prices which might introduce unnecessary new uses or harm the local industries, or through an inadequate supply which might harm the user industries;

6. to request the Scientific Assessment Panel to study and report, by 31 March 1994 at the latest, through the Secretariat, on the impact on the ozone layer of continued use of recycled controlled substances and of the utilization or non-utilization of available environmentally sound alternatives/substitutes and to request the Open-ended Working Group of the Parties to consider the report and to submit their recommendations to the Sixth Meeting of the Parties;

7. to request the Technology and Economic Assessment Panel to review and report, by 31 March 1994 at the latest, through the Secretariat, on:
   (a) the technologies for recovery, reclamation, recycling and leakage control;

(b) the quantities available for economically feasible recycling and the demand for recycled substances by all Parties;

(c) the scope for meeting the basic domestic needs of the Parties operating under paragraph 1 of Article 5 of the Protocol through recycled substances;

(d) the modalities to promote the widest possible use of alternatives/substitutes with a view to increasing their usage and release their reclaimed substances to Parties operating under paragraph 1 of Article 5 of the Protocol; and

(e) other relevant issues and to recommend policies with respect to recovery, reclamation and recycling, keeping in mind the effective implementation of the Montreal Protocol;

8. to request the Open-ended Working Group of the Parties to the Protocol to consider the reports of the Scientific Assessment Panel and the Technology and Economic Assessment Panel and any recommendations in this regard made by the Executive Committee and submit their recommendations to the Sixth Meeting of the Parties, in 1994.

➢ Decision V/26: Destruction Technologies

The Fifth Meeting of the Parties decided in Dec. V/26, further to decision IV/11 on destruction technologies:

(a) That there shall be added to the list of approved destruction technologies, which was set out in Annex VI to the report of the work of the Fourth Meeting of the Parties, the following technology: Municipal solid waste incinerators (for foams containing ozone-depleting substances);

(b) To specify that pilot-scale as well as demonstration-scale destruction technologies should be operated in accordance with the suggested minimum standards identified in Annex VII to the report of the Fourth Meeting of the Parties unless similar standards currently exist domestically.

➢ Decision VII/12: Control measures for Parties not operating under Article 5 concerning halons and other agents used for fire-suppression and explosion-inertion purposes

The Seventh Meeting of the Parties decided in Dec. VII/12:

1. To recommend that all Parties not operating under Article 5 should endeavour, on a voluntary basis, to limit the emissions of halon to a minimum by:

(a) Accepting as critical those applications meeting the essential-use criteria as defined in decision IV/25, paragraph 1 (a);

(b) Limiting the use of halons in new installations to critical applications;

(c) Accepting that existing installations for critical applications may continue to use halon in the future;

(d) Considering the decommissioning of halon systems in existing installations, which are not critical applications, as quickly as technically and economically feasible;

(e) Ensuring that halons are effectively recovered;

(f) Preventing, whenever feasible, the use of halon in equipment testing and for training of personnel;

(g) Evaluating and taking into account only those substitutes and replacements of halon, for which no other more environmentally suitable ones are available;

(h) Promoting the environmentally safe destruction of halons, when they are not needed in halon banks (existing or to be created);

2. To request the Technology and Economic Assessment Panel and its Halons Technical Options Committee to prepare a report to the Eighth Meeting of the Parties to provide guidance on the above.

➢ Decision VII/31: Status of recycled CFCs and halons under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The Seventh Meeting of the Parties decided in Dec. VII/31 that the international transfers of controlled substances of the Montreal Protocol which are recovered but not purified to usable purity specifications prescribed by appropriate international and/or national organizations, including International Standards Organization (ISO), should only occur if the recipient country has recycling facilities that can process the received controlled substances to these specifications or has destruction facilities incorporating technologies approved for that purpose.

➢ Decision VII/35: Destruction technology

The Seventh Meeting of the Parties decided in Dec. VII/35:

1. To note that the Technology and Economic Assessment Panel examined the results of testing and verified that the "radio frequency plasma destruction" technology of Japan meets the suggested minimum emission standards that were approved by the Parties at their Fourth Meeting for destruction technologies;

2. To approve, for the purposes of paragraph 5 of Article 1 of the Protocol, the radio frequency plasma destruction technology and to add it to the list of destruction technologies already approved by the Parties.

➢ Decision IX/21: Decommissioning of non-essential halon systems in non-Article 5 Parties

The Ninth Meeting of the Parties decided in Dec. IX/21:
Noting that in its 1994 report, the Scientific Assessment Panel identified decommissioning and destruction of halon as the second most environmentally beneficial potential approach to further lowering stratospheric chlorine and bromine abundances but that the Technology and Economic Assessment Panel concluded that such an approach, while technically feasible, was not appropriate at that time,
Noting that the Seventh Meeting of the Parties took action in relation to methyl bromide controls, which was the approach identified by the Scientific Assessment Panel as the most environmentally beneficial approach at that time,
Noting also that Parties are considering further controls on methyl bromide, Recognizing that, since 1994, some Parties have taken action to decommission and commence destruction of non-essential halon, Recognizing that depletion of the ozone layer continues to be a significant environmental concern and that atmospheric concentrations of halons continue to increase,
Recognizing that the Technology and Economic Assessment Panel is currently conducting an assessment of the availability of halons for critical uses under the terms of decision VIII/17,

1. To request the Technology and Economic Assessment Panel to examine the feasibility of early decommissioning in non-Article 5 Parties of all non-essential halon systems, and the subsequent destruction or redeployment of halon stocks not required for those critical uses that have no identified substitutes or alternatives, bearing in mind the need of Article 5 Parties for halon. In undertaking such an examination, TEAP should also examine the efficacy of halon alternatives, experience with potential measures to ensure safety and to minimize any emissions of halons during decommissioning, and experience with the cost and efficiency of storage prior to destruction and with halon destruction activities undertaken to date;

2. To request TEAP to report on this matter to the Tenth Meeting of the Parties.

➢ Decision X/7: Halon-management strategies

The Tenth Meeting of the Parties decided in Dec. X/7:
Noting that in the executive summary of its 1998 report, the Scientific Assessment Panel identifies complete elimination and destruction of halon-1211 and 1301 as the most environmentally beneficial option to enhance the recovery of the ozone layer,
Noting that the Technology and Economic Assessment Panel, in its 1998 report pursuant to decision IX/21, concludes that by definition all non-critical uses of halon-1211 and 1301 can be decommissioned, taking into account the costs and benefits of such operations,

1. To request all Parties to develop and submit to the Ozone Secretariat a national or regional strategy for the management of halons, including emissions reduction and ultimate elimination of their use;

2. To request Parties not operating under Article 5 to submit their strategies to the Ozone Secretariat by the end of July 2000;

3. In preparing such a strategy, Parties should consider issues such as:
   (a) Discouraging the use of halons in new installations and equipment;

   (b) Encouraging the use of halon substitutes and replacements acceptable from the standpoint of environment and health, taking into account their impact on the ozone layer, on climate change and any other global environmental issues;

   (c) Considering a target date for the complete decommissioning of non-critical halon installations and equipment, taking into account an assessment of the availability of halons for critical uses;

   (d) Promoting appropriate measures to ensure the environmentally safe and effective recovery, storage, management and destruction of halons;

4. To request the Technology and Economic Assessment Panel to update its assessment of the future need for halon for critical uses, in light of these strategies;

5. To request the Technology and Economic Assessment Panel to report on these matters to the Twelfth Meeting of the Parties.

➢ Decision XII/8: Disposal of controlled substances

The Twelfth Meeting of the Parties decided in Dec. XII/8:
Noting decisions II/11, III/10, IV/11, V/26 and VII/35 on destruction technologies and the previous work of the Ad Hoc Technical Advisory Committee on Destruction Technologies;

Also noting the innovations that have taken place in the field of destruction technologies since the last report of Advisory Committee;

Recognizing that the management of contaminated and surplus ozone-depleting substances would benefit from further information on destruction technologies and an evaluation of disposal options;

1. To request the Technology and Economic Assessment Panel to establish a task force on destruction technologies;

2. That the task force on destruction technologies shall:
   (a) Report to the Parties at their Fourteenth Meeting in 2002 on the status of destruction technologies of ozone-depleting substances, including an assessment of their environmental and economic performance, as well as their commercial viability;

(b) When presenting its first report, include a recommendation on when additional reports would be appropriate;

(c) Review existing criteria for the approval of destruction facilities, as provided for in section 2.4 of the Handbook for the International Treaties for the Protection of the Ozone Layer;

3. To request the Technology and Economic Assessment Panel:

(a) To evaluate the technical and economic feasibility for the long-term management of contaminated and surplus ozone-depleting substances in Article 5 and non-Article 5 countries, including options such as long-term storage, transport, collection, reclamation and disposal of such ozone-depleting substances;

(b) To consider possible linkages to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and other international treaties as appropriate regarding the issue of disposal;

(c) To report to the Parties on these issues at their Fourteenth Meeting in 2002.

- Decision XIV/6: Status of destruction technologies of ozone-depleting substances, including an assessment of their environmental and economic performance, as well as their commercial viability

The Fourteenth Meeting of the Parties decided in Dec. XIV/6:

1. To note with appreciation the Report of the Task Force on Destruction Technologies presented to the twenty-second meeting of the Open-ended Working Group;

2. To note that the Task Force has determined that the destruction technologies listed in paragraph 3 of this decision meet the suggested minimum emission standards that were approved by the Parties at their Fourth Meeting;

3. To approve the following destruction technologies for the purposes of paragraph 5 of Article 1 of the Protocol, in addition to the technologies listed in annex VI to the report of the Fourth Meeting and modified by decisions V/26 and VII/35:

(a) For CFC, HCFC and halons: argon plasma arc;

(b) For CFC and HCFC: nitrogen plasma arc, microwave plasma, gas phase catalytic dehalogenation and super-heated steam reactor;

(c) For foam containing ODS: rotary kiln incinerator;

4. To request the Technology and Economic Assessment Panel to update, in time for consideration by the twenty-third Open-ended Working Group, the Code of Good Housekeeping to provide guidance on practices and measures that could be used to ensure that during the operation of the approved destruction technologies, environmental release of ODS through all media and environmental impact of those technologies is minimized;

5. To consider, at the twenty-fourth meeting of the Open-ended Working Group, the need to review the status of destruction technologies in 2005, including an assessment of their environmental and economic performance, as well as their commercial viability.

- Decision XV/9. Status of destruction technologies for ozone -depleting substances and code of good housekeeping

1. To recall that the Montreal Protocol on Substances that Deplete the Ozone Layer does not require the Parties to destroy ozone-depleting substances;

2. To note that the report of the Technology and Economic Assessment Panel of April 2002 (volume 3, report on the Task Force on Destruction Technologies) provides information on the technical

and economic performance and commercial viability of destruction technologies for ozone-depleting substances;

3. To take note of the previous decisions of the Meeting of the Parties on the approval of destruction technologies (decisions IV/11, VII/35 and XIV/6) and, in particular, to note that those decisions did not distinguish between the capabilities of destruction technologies for specific types of ozone-depleting substances;

4. To approve, for the purposes of paragraph 5 of Article 1 of the Montreal Protocol, the destruction technologies listed as "approved" in annex II to the present report, which were found by the Task Force on Destruction Technologies to meet the destruction and removal efficiencies set out therein;

5. To recognize that, in approving the technologies listed in annex I, the Parties acknowledge that two technologies previously approved for all ozone-depleting substances have been limited in their scope to omit halons;

6. To call on each Party that operates, or plans to operate, approved technologies in accordance with paragraph 2 above to ensure that its destruction facilities are operated in accordance with the Code of Good Housekeeping Procedures, contained in annex III to the present report, as updated in the progress report of the Technology and Economic Assessment Panel in May 2003 and subsequently amended by the Parties, unless similar or stricter procedures currently exist domestically;

7. To highlight the need for Parties to pay particular attention to the adherence of facilities for the destruction of ozone-depleting substances to relevant international or national standards addressing hazardous substances and taking into account cross-media emissions and discharges, including those identified in annex IV to the present report;

- Decision XV/10. Handling and destruction of foams containing ozone –depleting substances at the end of their life

To request the Technology and Economic Assessment Panel, in its April 2005 report:

(a) To provide updated useful information on the handling and destruction of ozone-depleting substance-containing thermal insulation foams including thermal foams situated in buildings, with particular attention to the economic and technological implications;

(b) To clarify the distinction between the destruction efficiency achievable for ozone-depleting substances recovered from foams prior to destruction (reconcentrated) and the destruction efficiency achievable for the foams themselves containing ozone-depleting substances (dilute source);

3. Comments made by Parties to the Montreal Protocol on recovery and destruction

- 12th Meeting of the Parties

After reporting on the number of new Parties to the Vienna Convention and the Montreal Protocol, he mentioned that a draft decision was before the Parties concerning the long-term strategy for ODS disposal and destruction technologies, as well as another on prevention of illegal trade in ODS and products containing ODS. (9th paragraph of the report)

- 14th Meeting of the Parties

In his opening address, Mr. Clini welcomed participants to the combined sixth meeting of the conference of the Parties to the Vienna Convention and the Fourteenth Meeting of the Parties to the Montreal Protocol. He described the process under the Montreal Protocol as a major example of global initiatives aimed at achieving sustainable development, noting that efforts to ensure the protection of

the ozone layer had been marked by a strong driving force for global technological innovation in several industrial sectors in both developed and developing countries. He welcomed the remarkable results that had been achieved in restructuring industrial practices and altering consumer behaviour and trade patterns, and which had involved millions of enterprises and consumers, as well as considerable financial resources.
Given the fact that the phasing-out of ozone-depleting substances (ODS) had almost been completed in industrialized countries, the focus was now on the phasing-out of critical and essential uses, the recovery of the ozone layer, the destruction of ODS and the fight against illegal trade. (4th paragraph of the report)

A number of representatives sought to know what action should be taken regarding illegally imported quantities of substances seized by customs agencies. One representative observed that Article 5 Parties could come under pressure from multinational companies in this regard; he quoted an example where his Government had recently destroyed banned products and had been asked to reimburse the operator. The representative of Poland clarified that the disposal of seized products was a matter for the Government concerned; Article 5 Parties, where consumption was still allowed, could sell them at auction, export them or stockpile them, though of course the quantities thus disposed of would then count against their own consumption limits. Destruction was also a possibility, but may pose problems of cost and practicality. (93rd paragraph of the report)

- 15th meeting of the parties

The Panel had determined that over 1,000,000 tonnes of ozone-depleting substances were available for recovery and destruction. Parties might therefore wish to consider exempting production for approved essential and critical applications in non-Article 5 countries only if equal or greater ozone-depleting-potential quantities were recovered and destroyed. (212 paragraph of the advance report)

Annex VI. Additional information sources

- **Report of the International Workshop on the Disposal of Ozone-Depleting Substances (July 10, 2000. Geneva International Conference Centre)**

  <http://www.uneptie.org/ozonaction/library/training/destruction.html>

- **Report of the Task Force on Collection, Recovery and Storage April 2002**

  <http://www.unep.org/ozone/teap/Reports/Other_Task_Force/TEAP02V3a.pdf>

- **Report of the Task Force on Destruction Technologies April 2002**

  <http://www.unep.org/ozone/teap/Reports/Other_Task_Force/TEAP02V3b.pdf>

- **UNEP DTIE OzonAction Programme. ODS Destruction Page**

  <http://www.unepie.org/ozonaction/sector/destruction/index.htm>