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## United Nations Environment Programme

**Open-ended Working Group of the Parties to  
the Montreal Protocol on Substances that  
Deplete the Ozone Layer  
Thirty-second meeting**  
Bangkok, 23–27 July 2012  
Item 4 (a) of the provisional agenda\*

**Issues related to exemptions from Article 2  
of the Montreal Protocol: nominations for  
essential-use exemptions for 2013 and 2014**

### **Procedures for assessing the ozone-depleting potential of new substances that may be damaging to the ozone layer**

#### **Note by the Secretariat**

1. In the essential use nomination for the aerospace industry, the Russian Federation reported that alternative solvents, including a new chemical, RC-316c, were being tested for use as an alternative to CFC-113. According to the preliminary assessment of the Technology and Economic Assessment Panel, RC-316c is technically a chlorofluorocarbon (1,2-dichloro-1,2,3,3,4,4-hexafluorocyclobutane) that is not currently controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer. The ozone-depleting potential and the global-warming potential of RC-316c are not known.
2. The Meeting of the Parties has adopted several decisions dealing with substances that might have ozone-depleting potential and are not subject to the Protocol, including decisions IX/24, X/8, XI/19 and XIII/5. In paragraph 2 of decision XIII/5, the Meeting of the Parties asked the Secretariat to request any Party that had an enterprise producing a listed new substance to request that enterprise to undertake a preliminary assessment of the ozone-depleting potential of the substance, following procedures to be developed by the Scientific Assessment Panel, and to submit, if available, toxicological data on the substance, and to report on the outcome of its assessment to the Secretariat. In paragraph 4 of the same decision, the Meeting of the Parties requested the Secretariat to notify the Panel of the outcome of any such preliminary assessment to enable the Panel to review it.
3. In accordance with paragraph 2 of decision XIII/5, the Scientific Assessment Panel prepared a draft procedure for undertaking a preliminary assessment of the ozone-depleting potential of new substances. In essence, under the draft procedure relevant enterprises producing any new substances would be requested to measure or determine a number of basic properties of those substances, and atmospheric scientists who are able to carry out numerical modelling to estimate ozone-depleting potential would be requested to do so. The draft procedure is set out in the annex to the present note.
4. The Technology and Economic Assessment Panel provided advice regarding a number of enterprises that may be manufacturing or marketing the new substance RC-316c. In accordance with paragraph 2 of decision XIII/5, the Secretariat contacted the relevant Parties, requesting them to contact the enterprises of their countries for information on RC-316c. Any enterprise confirmed to be

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\* UNEP/OzL.Pro.WG.1/32/1.

manufacturing RC-316c would be asked to conduct a preliminary assessment of ozone-depleting potential and provide any toxicological data available. The draft procedure of the Panel was also sent to the relevant Parties for their use and for comments, if any.

5. In accordance with paragraph 3 of decision XIII/5, the relevant Parties have been called on to encourage enterprises that are found to be manufacturing RC-316c to conduct a preliminary assessment of the ozone-depleting potential of RC-316c within one year. In order to facilitate possible collaboration on a joint effort, the Secretariat has ensured that all the relevant Parties receiving the request know which other Parties are also receiving the same request.

6. In accordance with paragraph 4 of decision XIII/5, the Secretariat will notify the Scientific Assessment Panel of the outcomes of the preliminary assessment to enable the Panel to provide a review in its annual report to the Parties. The Panel will make a recommendation to the Parties as necessary when a more detailed assessment of the ozone-depleting potential may be warranted.

7. The Parties may wish to note the progress being made and provide comments. Any comments on the draft procedure will be communicated to the Scientific Assessment Panel.

## Annex

### Procedure for assessing the ozone-depleting potential of new substances that may be damaging to the ozone layer

#### Procedure suggested by the Scientific Assessment Panel

##### Draft

Ozone-depleting potential (ODP) is defined as the steady-state ozone reduction calculated for each unit mass of a gas emitted per year (as a continuous release) into the atmosphere relative to that for a unit mass emission of CFC-11. This definition provides a relative measure of the calculated effect on ozone of a given compound compared to the effect calculated for CFC-11.

##### Montreal Protocol decision background

1. Under the Montreal Protocol, decision XIII/5, "Procedures for assessing the ozone-depleting potential of new substances that may be damaging to the ozone layer", provides guidance on assessing new substances.
2. Under paragraph 2 of decision XIII/5, the Party that has an enterprise producing a new substance is to request the enterprise to "undertake a preliminary assessment of its ODP following procedures to be developed by the Scientific Assessment Panel".

Thus the responsibility for providing the preliminary ODP value is the responsibility of the Party making such a suggestion. Further, the Party may have to comply with the laws of individual nations for the production and utilization of such new chemicals.

##### Ozone-depleting potential background

###### *Background on calculating ODP*

Thus far, the Parties to the Montreal Protocol are using what is termed a "steady state ODP" in their decisions and those numbers for ozone-depleting substances (ODS) are listed in the Scientific Assessment Panel reports.

###### *Quantification of ODP*

The science of calculating ODP requires expert knowledge, laboratory measurements and atmospheric numerical models. References to the procedures for calculating them and information needed for such calculations are described very briefly in former SAP reports and many peer-reviewed publications. For example, see:

- (a) Section 4.3.2 of WMO (1989);
- (b) Fisher et al., *Nature*, vol. 344, p.508, 1990.

The calculations usually need detailed and quantitative knowledge of various laboratory-measured physical-chemical properties of the molecule in question. There is no comprehensive list of these properties. The measured properties must be carefully considered for each molecule on the basis of expert knowledge of the molecule in question.

###### *Approach for obtaining ODP*

The necessary steps for determining ODP would consist of the following:

1. The Party requests the enterprise producing the specific new chemical to carry out a preliminary assessment of the ODP of the chemical and to submit the results together with the methodologies used to make the preliminary ODP assessment and the available toxicological data for the chemical.
2. The enterprise would need to contact scientific experts who can measure, estimate or otherwise determine the needed basic properties of the chemical in question. The basic properties would include the chemical's solubility in water, its photolytic properties and kinetic studies of reactions relevant to its chemistry in the atmosphere,
3. The enterprise would need to give the information about those properties to atmospheric scientists who can carry out numerical modelling to estimate the ODP.

4. The enterprise would send the methodologies and results of the preliminary ODP assessment to the Party, which would send the information to the Ozone Secretariat. The Ozone Secretariat would then provide the information to SAP. SAP would provide its assessment of the methodologies and results in its annual report to the Parties. SAP would recommend to the Parties when a more detailed assessment of the ODP of the new substance may be warranted.

If requested, the names and information about suitable atmospheric scientists who can carry out the measurements of properties and the modelling (steps 2 and 3) can be provided by the Ozone Secretariat, with assistance from the SAP Co-Chairs.

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