TEAP RESPONSE TO DECISION XXVI/5(2) ON LABORATORY AND ANALYTICAL USES

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What are LAUs of ODS?

• Laboratory and analytical uses (LAUs) of controlled substances have included:
  – Equipment calibration;
  – Extraction solvents, diluents, or carriers for specific chemical analyses;
  – For biochemical research;
  – As a carrier for laboratory chemicals; and
  – For other critical R&D purposes where substitutes are not available, or where standards set by national and international agencies require specific use of controlled substances.

• Main ODS have been carbon tetrachloride, CFC-113 and 1,1,1-trichloroethane.
Decision XXVI/5(2): Global laboratory and analytical use exemption (1)

“Recalling decisions VII/11 and XXI/6, in which the Meeting of the Parties requested all parties to urge their national standards-setting organizations to identify and review their standards for laboratory and analytical procedures that mandate the use of Montreal Protocol controlled substances with a view to adopting, where possible, laboratory and analytical products and processes that do not use controlled substances,

Recalling also decisions VII/11, XI/15, XVIII/15 and XIX/18, by which the Meeting of the Parties eliminated specific uses from the global exemption for laboratory and analytical uses,
Decision XXVI/5(2): Global laboratory and analytical use exemption (2)

1. To extend the global laboratory and analytical-use exemption until 31 December 2021, under the conditions set out in Annex II to the report of the Sixth Meeting of the Parties and decisions XV/8, XVI/16 and XVIII/15, for the controlled substances under the Montreal Protocol in all annexes and groups except Annex C, group 1;

2. To request the Technology and Economic Assessment Panel to report no later than 2018 on the development and availability of laboratory and analytical procedures that can be performed without using controlled substances under the Montreal Protocol;

3. To encourage parties to continue to investigate domestically the possibility of replacing ozone-depleting substances in laboratory and analytical uses and to share the resulting information.”
TEAP response to decision XXVI/5(2)

- Reports on the development and availability of LAUs performed without using controlled substances
- Considers available alternatives, and potential barriers to adoption in A5 and non-A5 parties
- Reviews standards for analytical procedures, within constraints:
  - Limited resources, limited access to information, large body of documented standards, variations in global adoption, wide range of different applications.
- Limits focus to controlled substances already included in global exemption. Available information on known LAUs using HCFCs included. Annex F not included.
Reported global production under A7

- In 2016, global production of all reported controlled substances for LAUs was relatively small (151 tonnes, 166 ODP tonnes).
- Carbon tetrachloride is the main controlled substance produced for these uses (> 99.9%).
  - Production of other controlled substances is very small.
- Reported production in non-A5 parties has decreased from peak of 440 tonnes in 1998 to 21 tonnes (14% of global total) in 2016.
- Reported production in A5 parties has decreased from peak of 257 tonnes in 2010 (reporting started only in 2009) to 130 tonnes (86% of global total) in 2016.
Laboratory solvent and reagent uses

• Many laboratory uses of ODS can be phased out, e.g. as solvent or cleaning agent.
• A review of the use of CTC as a solvent in reactions involving $N$-bromosuccinimide (NBS) has identified alternatives.
• Alternatives available for MB used as methylating agent.
• TEAP/MCTOC are recommending these be excluded from the global essential use exemption:
  – CTC used as reaction solvent (including in reactions involving NBS).
  – MB used as a methylating agent.
Standards relating to LAUs

- Standards establish uniform criteria and allow comparisons over time: they are used as quality assurance for a product, or by a regulatory authority.
- International standards bodies are continuing to work on development of new standards methods to replace ODS.
- ODS have been replaced by alternatives in a number of standards.
Barriers in adoption of alternatives

• Challenges remain for non-A5 and A5:
  – Some standards still allow or require the use of ODS.
  – ISO and ASTM International list some active standards requiring the use of ODS, despite the availability of alternatives, implying barrier (unknown) in adoption of alternatives

• Challenges remain for A5s in adopting alternatives:
  – Adherence to standards using ODS
  – Cost and time to develop and adopt alternative analytical procedures/standards

• Some standards (where ODS used as a reference chemical) may remain for as long as the ODS is needed in applications, or for enforcement, or for measurements.
## Recommendations to removal LAUs from global exemption

<table>
<thead>
<tr>
<th>ODS Type</th>
<th>Procedures</th>
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<tbody>
<tr>
<td>Methyl bromide</td>
<td>Laboratory uses as a methylating agent</td>
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<tr>
<td>Carbon tetrachloride</td>
<td>Reaction solvents</td>
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<tr>
<td>CTC</td>
<td>A solvent for IR, Raman and NMR spectroscopy</td>
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<tr>
<td>CTC</td>
<td>Grease removal and washing of NMR tubes</td>
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<tr>
<td>CTC</td>
<td>Iodine partition and equilibrium experiments</td>
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<tr>
<td>CTC</td>
<td>Determination of hydrocarbons in water, air, soil or sediment</td>
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<tr>
<td>CTC</td>
<td>Determination of moisture and water</td>
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<tr>
<td>1,1,1-Trichloroethane</td>
<td>Determination of bromine index</td>
</tr>
<tr>
<td>CTC</td>
<td>Determination of iodine index</td>
</tr>
</tbody>
</table>
Other recommendations

• Parties may wish to consider establishing cooperation with standards organisations to facilitate and accelerate the development or revision of standards for the replacement of ODS in analytical uses.

• Parties may also wish to consider providing:
  – more comprehensive data (e.g. on consumption);
  – sharing information on alternatives and on the revision of standards that use ODS;
  – possible support for the development and/or revision of standards, and/or training, where needed.
Other considerations

• Many standards still require the use of small quantities of ODS.
• Removal of specific LAUs on a case by case basis from the global exemption creates confusion on what’s allowable.
• Monitoring of, and adherence to, specific authorised uses of ODS in LAUs may become increasingly challenging as the exclusion list expands, while providing diminishing environmental benefits.
THANK YOU