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**Intergovernmental negotiating committee
to prepare a global legally binding instrument on mercury
Second session**

Chiba, Japan, 24–28 January 2011
Item 3 of the provisional agenda*

**Preparation of a global legally binding instrument
on mercury**

**Mercury-containing products, processes and technologies and
their alternatives**

Note by the secretariat

1. At its first session, held from 7 to 11 June 2010, the intergovernmental negotiating committee to prepare a global legally binding instrument on mercury requested the secretariat to prepare information on all known mercury-containing products and mercury-using processes and technologies. It also requested information on alternatives to those products, processes and technologies, and on the costs and availability of such alternatives.
2. At its second meeting, held in Nairobi from 6 to 10 October 2008, the Ad Hoc Open-ended Working Group on Mercury had considered documents describing major mercury-containing products and processes, their substitutes and experience in switching to mercury-free products and processes (UNEP(DTIE)/Hg/OEWG.2/7 and Add.1). Following the committee's request for information at its first session, the secretariat contacted all Governments and requested them to submit updated information on the use of mercury-containing products, processes and technologies and on moves away from such products, processes and technologies. The information provided in response has been summarized in the present note, which should be read in conjunction with documents UNEP(DTIE)/Hg/OEWG.2/7 and Add.1.
3. The committee may wish to consider the information presented on the existence of viable alternatives to many current uses of mercury in its discussions on the use of mercury in products, processes and technologies. The table below provides a summary of the submissions received. The key conclusions are as follows:
 - (a) A number of Governments that previously reported regulations on the use of mercury in products provided updated information indicating a continuing decrease in the quantity of mercury used;
 - (b) A continuing trend towards the use of non-mercury alternatives, particularly in the health-care sector, was observed, with a number of additional reports from countries of individual hospitals using alternative technologies, in addition to plans to expand the switch to alternatives to other sites;

* UNEP(DTIE)/Hg/INC.2/1.

(c) Information on efforts to identify and use alternatives to processes that rely on the use of mercury was provided by various countries.

<i>Government</i>	<i>Summary of submission</i>												
Burundi	No detailed information is provided. It is, however, indicated that cosmetics containing mercury are imported and used. Mercury is used in medical equipment, dentistry and a range of products, and it is known that emissions result from the processing of unsorted waste. No information on the use or availability of alternatives is provided.												
China	No systematic survey on mercury-containing products, mercury-using processes or their alternatives has yet been undertaken. A number of mercury-related sectors and industries exist. Research and development is under way, as is the production of alternatives, but only in a small number of sectors, including acetylene-based vinyl chloride monomer production and mercury-containing medical instruments. This work is considered preliminary, and cost-benefit information will not be available until further systematic research and study have been undertaken.												
Denmark	The use of mercury in dentistry is now less than 100 kg per year, with many patients requesting alternatives as a result of heightened public awareness. Use is estimated to have decreased by more than half between 2000 and 2007. The use of mercury in electrical and electronic devices, excluding batteries and lamps, fell from 0.24 tonnes per year in 2001 to current estimates of 0.001 tonnes per year. The quantity of mercury used in lamps was unknown, but was estimated to be on the rise as a result of legislation banning conventional light bulbs.												
Estonia	Products are regulated in accordance with directive 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety.												
Gabon	No precise information on all products containing mercury is available. Experience with mercury thermometers is, however, considered to be representative of experience with other products. Success has been reported in the medical sector in replacing such thermometers with electronic thermometers.												
Hungary	A number of products containing thiomersal are produced, including influenza vaccine, eye drops, some injections and other preparations. Quantities used are small, as described below: <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">Influenza vaccines:</td> <td>2008: 200 g</td> </tr> <tr> <td></td> <td>2009: 750 g</td> </tr> <tr> <td>Eye drops:</td> <td>2008: 40 mg</td> </tr> <tr> <td></td> <td>2009: 44 mg</td> </tr> <tr> <td>Gynevac injection:</td> <td>2008: 51 mg</td> </tr> <tr> <td></td> <td>2009: 12 mg</td> </tr> </table> <p>Other products containing phenylmercury acetate are sold (including nasal sprays and eye drops), with around 1.1 kg used in 2008 and 1 kg used in 2009. Cosmetics containing mercury are not produced in Hungary.</p> <p>A chlor-alkali electrolysis plant using the mercury-pool cathode process is in operation. The sodium hydroxide solution produced in this process contains a maximum of 0.1 ppm of mercury, while the sodium hypochlorite solution products contain a maximum of 0.5 mg/l of mercury. The company will not operate the mercury pool cathode technology after 2020.</p>	Influenza vaccines:	2008: 200 g		2009: 750 g	Eye drops:	2008: 40 mg		2009: 44 mg	Gynevac injection:	2008: 51 mg		2009: 12 mg
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Madagascar	Madagascar imports products containing mercury, including thermometers, electrical switches and relays, light sources, batteries, biocides and pesticides, paints, cosmetics and related products, dental amalgam, toilet liquid, soap, paint and varnish, perfumes, vaccines and hair preparation materials. Information on the concentration of mercury in these products is not provided. Few alternative products are available, with some considered to be too expensive. Efforts are under way to investigate the use of alternatives.												

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Mauritius	<p>Mercury is used in jewellery shops to recover waste gold, with approximately 7 kg used annually. Mercury may be used in laboratories (16 government and 45 private laboratories). No data are available on quantities, however. According to import statistics, 442 kg of mercury was imported over the years 2004–2007, with none imported in 2008 or 2009. School laboratories no longer use mercury or its compounds, although 3,000 mercury thermometers are purchased annually for school use.</p> <p>Medical use: in 2007, 653 sphygmomanometers and 1,035 thermometers were in use. Processes to replace this equipment with alternatives began in 2008. Replacement measures will also reduce the use of mercury in dental practices.</p> <p>Mercury use in products for which affordable alternatives are available is banned or restricted. Imports of mercury-containing batteries are prohibited under the Consumer Protection (Control of Imports) Regulations 1999. Mercury and its compounds are classified as extremely dangerous industrial chemicals, and their import and use is restricted. Mercury compounds in agricultural chemicals are prohibited. Mercury is no longer used in paints.</p>
New Zealand	<p>Common mercury-containing products include batteries, anti-lock braking systems, thermometers, electrical switches and lamps. In the 2008 inventory, it is estimated that emissions from those sources amount to approximately 260 kg per year. This figure is calculated from emissions from batteries and lamps, as there are insufficient data to quantify emissions from other products.</p> <p>For compact fluorescent lamps, three scenarios were developed to predict mercury disposal for the years 2008–2018, assuming the current recycling rate of 2 per cent. In the low-uptake scenario, the mercury disposal required is estimated to be 5 kg per year; in the middle scenario, 18 kg per year; and in the high-uptake scenario, 26 kg per year.</p> <p>For linear fluorescent lamps (used mainly in commercial lighting) 18 kg of mercury releases are estimated. A higher rate of recycling is predicted for these lamps as a result of their institutional and commercial use, which is more likely to result in recycling than domestic use, which is widespread.</p> <p>No data exist on mercury-containing domestic thermometers. It is, however, anticipated that they will be gradually replaced with alcohol or digital thermometers. No estimates are made of emissions from the use of mercury in switches, as the impact of international restrictions on mercury use was unclear.</p> <p>Total mercury in other products (particularly liquid crystal display televisions, which can contain up to 150 mg of mercury) could not be estimated, but it is considered likely that the quantity of mercury will be reduced over time as a result of regulations adopted in the European Union and the United States of America.</p> <p>A number of types of batteries contain mercury, including mercuric oxide, silver oxide, zinc air and alkaline batteries. Annual emissions from these batteries in 2018 are estimated at 170 kg.</p> <p>The use of mercury in dental amalgam is generally decreasing. It is anticipated that that trend will continue with a move towards alternatives. Annual emissions in 2008 were estimated at 30 kg.</p> <p>Hospital use of mercury-containing equipment in 2008 was being phased out, or had already been phased out. All waste was disposed of using hazardous waste management systems, and releases from hospital use of medical devices were considered to be negligible.</p> <p>Research laboratories and universities continue to use mercury in various processes and types of equipment. Mercury is no longer used in tanning, pigments or lighthouses.</p>

<i>Government</i>	<i>Summary of submission</i>
Panama	<p>The use of mercury-containing pesticides in agriculture is prohibited. Imports of a range of mercury-containing substances considered to be hazardous are regulated.</p> <p>Plans are in place to monitor the removal and replacement of incandescent electric light fixtures containing mercury by a number of companies, including Etesa, Edemet Edechi (Unión Fenosa S.A.) and Electra Noreste S.A.</p> <p>Some laboratories use small amounts of mercury. There are reports that some mercury has been discarded directly into the water supply.</p> <p>The Instituto Especializado de Análisis generates some mercury waste and has developed a process for treating and confining it.</p> <p>An immunization programme has been provided with digital thermometers to replace mercury-containing thermometers.</p>
Sweden	<p>A new ordinance prohibits the use of mercury in chlor-alkali production from 1 January 2014.</p> <p>Only nine patients have been treated with mercury-containing dental amalgam since a ban on its use entered into force. Alternatives used are ceramics, glass ionomer cement and cast metal (principally gold alloys, cobalt-chromium alloys and titanium).</p> <p>Thiomersal may be used to disinfect medical equipment until 31 December 2012. One hospital has phased out its use ahead of this ban, using as alternatives sodium azide and immuno-adsorba.</p> <p>Phenylmercury salts and thiomersal are permitted in eye make-up and products for removing eye make-up at very low levels (below 0.007 per cent). Very few such products on the market contain mercury, and many alternatives (including methyl-paraben and propyl-paraben) are available.</p> <p>Mercury compounds for analysis, research and development in aid of medical diagnosis are permitted until 31 December 2012. Alternative chemicals, such as sodium borohydride or sodium azide, and alternative processes such as mass spectrometry may be used.</p> <p>Mercury compounds may continue to be used as catalysts in organic chemical synthesis until 31 December 2012. Some alternatives, such as other metals and processes, are available.</p> <p>An exemption until 31 December 2012 applies to analytical chemicals, with this exemption extended until 31 December 2014 for pharmaceutical analysis according to international standards. Alternatives exist for these analyses.</p> <p>Mercury-free alternatives for strain gauge plethysmographs have been used for approximately 10 years. No alternatives for porosimeters are currently used. Alternatives have been identified, but need to be validated or further developed.</p> <p>A national ban on mercury containing relays and electrical contacts has been in place since the beginning of the 1990s and now covers all kinds of electrical components. Alternatives include the use of semiconductors and substances such as silver tin oxide and silver nickel alloys.</p> <p>Seam-welding machines are exempt from the total ban on mercury use, with welding machines for straight seams exempted until 31 December 2013 and spare-part use in welding of curved seams exempted until 31 December 2017.</p> <p>Mercury is used to determine defining fixed points in the International Temperature Scale of 1990. No alternative to mercury-for this use is available. Mercury is also used in reference calibration instruments where there is a need for high precision.</p> <p>For other measuring devices, including manometers, hygrometers, barometers and pyrometers, mercury-free alternatives are used.</p> <p>Mercury baths are used in seven of Sweden's 2,200 lighthouses; alternatives (mechanical moving devices) are available.</p>
Uruguay	<p>The University Hospital began to replace mercury thermometers and blood pressure monitoring devices in 2007, collecting the old devices. This experience is being replicated in other medical centres.</p>

<i>Government</i>	<i>Summary of submission</i>
United States	Mercury use in the United States has decreased to approximately 63 tonnes annually, attributable both to the phase-out of certain mercury uses and to the reduction of mercury content in products and processes. The main categories of current uses are switches and relays (44 per cent), dental amalgam (24 per cent), lamps (15 per cent), thermostats (6 per cent), miscellaneous uses (4 per cent), batteries (3 per cent) measuring devices (2 per cent) and formulated products (2 per cent).
