

**– ASSESSMENT REPORT –**

**EXCESS MERCURY SUPPLY  
IN LATIN AMERICA AND  
THE CARIBBEAN, 2010-2050**



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**UNEP CHEMICALS**

*This paper has been researched and prepared by Peter Maxson, Director, Concorde East/West Spri, under contract to UNEP Chemicals, with all reasonable care and due diligence. While the author has greatly benefited from valuable contributions from a number of colleagues, as well as from the Proceedings of the Latin America and Caribbean Mercury Storage Project Inception Workshop (22-23 April 2009, Montevideo, Uruguay), he accepts complete responsibility for the accuracy of the paper and the stated conclusions. Nevertheless, third parties who rely on information contained in this document, or their own interpretation thereof, do so at their own risk.*

# Assessment report: Excess mercury supply in Latin America and the Caribbean, 2010-2050

## Executive summary

The UNEP Governing Council decision GC 24/3 IV identified seven priority areas for action to reduce the risks from releases of mercury, two of which are:

- To reduce the global mercury supply, including considering curbing primary mining and taking into account a hierarchy of sources; and
- To find environmentally sound storage solutions for mercury.

Even more recently, the UNEP Governing Council decision GC 25/5 (paragraph 34) mandated member governments to take further international measures including the elaboration of a legally binding instrument on mercury, which could include both binding and voluntary approaches, as well as a range of interim activities, to reduce risks to human health and the environment.

In the Latin American and Caribbean region, the increasing capture of by-product mercury from mining operations, and the increasing use of alternatives to replace mercury, will result in excess mercury in the region. In addition, the management of mercury supplies is now seen as a valuable policy tool with which to help reduce the demand for mercury in sectors where there are viable mercury-free alternatives.

If not needed for acceptable applications, mercury must be managed properly and stored, thereby preventing its re-entry into the global market. Identifying environmentally sound storage solutions for mercury is therefore recognized as a priority.<sup>1</sup>

Places to safely sequester the excess mercury are needed, since we know that elemental mercury, apart from being toxic, cannot be destroyed or degraded. Governments and other stakeholders need to understand how to manage this mercury over the long term in order to avoid its re-entry into the global marketplace. This understanding includes planning for the necessary storage capacity, discussing regional coordination activities, securing financial and technical support, identifying technical criteria (including site assessments) that constitute environmentally sound long-term storage, and developing the basic design of such a facility or facilities. As a first step in the planning process, this report estimates the quantities of mercury that may become available in the region for sequestration, and time horizons for taking appropriate action.

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<sup>1</sup> Throughout this report, the terms “storage” and “long-term management” are used interchangeably, and refer to long-term sequestration of the mercury from the global marketplace. The terms are not intended to suggest how the mercury would be sequestered, or the type of facility or facilities where such sequestration would occur.

This analysis confirms that the Latin American and Caribbean region imports and exports significant quantities of mercury. The vast majority of mercury consumed in the region is used for small-scale gold mining, and lesser amounts for chlor-alkali and product applications.

This analysis observes that future sources of mercury in the Latin American and Caribbean region will include mainly mercury recovered as a by-product of mining operations, and mercury recovered from the closure/conversion of mercury cell chlor-alkali plants. Such regional sources of mercury are compared in this analysis with the regional uses mentioned above in order to better understand the mercury supply and demand equilibrium in the region.

Accordingly, this report presents a framework for better understanding future mercury supply and demand within Latin America and the Caribbean – a framework necessary to inform discussions about managing and storing mercury in the region. This analysis provides background information for the “Inception Meeting of the Latin American and Caribbean Storage Project” that is scheduled to take place in April 2009, in Montevideo, Uruguay.

UNIDO and other experts have determined that mercury supply restrictions, such as mercury storage, can contribute to significant demand reductions in small-scale gold mining. Subsequently, measures to influence supply and demand can be mutually reinforcing, and to some extent supply restrictions that precede demand reductions can be even more effective. Therefore, for this region, planning for mercury storage may be especially important as an initiative to further encourage demand reduction.

According to the Base Case Scenario assessed in this report, the mercury supply in Latin America and the Caribbean may exceed demand even before 2015, which could imply a need for storage of the excess mercury. This scenario assumes that stricter requirements will be imposed on the industrial mining sector that will lead to the recovery of additional by-product mercury. On the other hand, this time frame could be a few years longer if certain international gold mines in South America continue to export their by-product mercury to the United States.

The urgency of a Latin American and Caribbean mercury storage capability will depend on the rate of further demand reductions, the extent to which countries in the region wish to encourage these further demand reductions through supply restrictions, and the extent to which a regional storage solution is achieved (even though net supplies of excess mercury may occur in a relatively small number of countries).

The Base Case Scenario shows that the quantity of mercury that may need to be stored in the Latin American and Caribbean region between 2015 and 2050 could amount to over 8,000 tonnes. According to an alternative Minimum Storage Scenario, in which it is assumed that some by-product mercury continues to be exported, and it is assumed there is a generally slower increase in the generation of by-product mercury, the quantity of mercury accumulated may be closer to 2,000-3,000 tonnes. These scenarios do not reflect the possible adoption of an immediate or near-term regional strategy of sequestering mercury as a way of encouraging reduced mercury demand. Adoption of such a strategy would require development of storage capacity as soon as possible.

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## 1 Background

### 1.1 Aims

The overall aim of this analysis is the identification of sources and quantification of metallic mercury for storage from the Latin American and Caribbean region, i.e., to provide a better understanding of future mercury supply and demand within Latin America and the Caribbean – a framework necessary to inform discussions about managing excess mercury in the region. This analysis provides background information for the “Inception Meeting of the Latin American and Caribbean Storage Project” that is scheduled to take place in April 2009, in Montevideo, Uruguay. At this meeting, discussions are expected to revolve around the possible need for a regional mercury storage facility or facilities, as the preferred option, or the most environmentally sound option.

Therefore, mercury supply and demand needs to be better understood before any subsequent steps are taken – which may include planning for the necessary storage capacity, discussing regional coordination activities, securing financial and technical support, identifying technical criteria (including site assessments) that constitute environmentally sound long-term storage, and developing the basic design of such a facility or facilities.

Once basic estimates of excess mercury flows have been generated, governments, regional development organisations, and non-governmental organisations (NGOs) can use this information as a basis for taking the next steps toward planning for the necessary storage capacity, including regional coordination activities, securing financial and technical support, identifying a suitable location, and the basic layout of the facility. As the first step, excess or surplus mercury from identified sources will be estimated and projections will be made for the next 40 years in the Latin American and Caribbean region.

This report is the first part of the UNEP project, “Reduce Mercury Supply and Investigate Mercury Storage Solutions”, and will feed into the subsequent feasibility study that will evaluate options for the long term management (such as safe long term storage) of mercury in Latin America and the Caribbean.

### 1.2 Context

UNEP Governing Council decision GC 24/3 IV identified seven priority areas for action to reduce the risks from releases of mercury, two of which are:

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- To find environmentally sound storage solutions for mercury.

Even more recently, the UNEP Governing Council decision GC 25/5 (paragraph 34) mandated member governments to take further international measures including the elaboration of a legally binding instrument on mercury, which could include both binding and voluntary approaches, as well as a range of interim activities, to reduce risks to human health and the environment.

The increasing recovery of mercury as a by-product of mining activities, and the mercury that becomes available when chlor-alkali facilities are closed add to the global supply. Meanwhile, the increasing use of alternatives to replace mercury-added products results in decreased regional demand for mercury. As a result, the management of mercury supplies is now seen as a valuable policy tool with which to help reduce the demand for mercury in sectors where there are viable mercury-free alternatives.

The reduction of mercury supplies, and long term management of mercury, have both been identified as priorities of the UNEP Governing Council. If not needed for acceptable applications, mercury must be managed properly and stored, thereby preventing its re-entry to the global market. Identifying environmentally sound storage solutions for mercury is therefore recognized as a priority. Repository/storage facilities are needed to isolate the mercury indefinitely to avoid it leaking into the environment. Since we know that elemental mercury, apart from being toxic, cannot be destroyed or degraded, governments and other stakeholders need to understand how to manage this mercury over the long term in order to avoid its re-entry into the global marketplace.

Present information suggests that there will be excess mercury generated in Latin America and the Caribbean as a result of phasing out mercury-containing products, the recovery of mercury used in chlor-alkali production, mercury recovered from smelting of metallic ores, etc. Therefore, mercury flows need to be better understood before any subsequent steps are taken – such as planning for the necessary storage capacity, discussing regional coordination activities, securing financial and technical support, identifying technical criteria (including site assessments) that constitute environmentally sound long-term storage, and developing the basic design of such a facility or facilities.

### **1.3 Scope**

The investigation into the feasibility of Latin American and Caribbean regional capacity for the terminal storage of excess mercury has been structured in two initial phases. The first phase would assess the quantities of mercury that may need to be stored. Should such quantities be significant, the second phase would focus on the location, design, financing and other practical requirements of an appropriate storage facility.

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