

## **1.0 INTRODUCTION**

### **1.1 BACKGROUND**

The enclosed final report for the *Regional Capacity Building Program for Health Risk Management of Persistent Organic Pollutants (POPs) in South East Asia* (POPs Project) provides an economic evaluation for the project case study in Malaysia – Air Hitam Sanitary Landfill, in Puchong, Selangor (hereafter, the “AHSL site”). Economic reports for the other 3 selected study sites in Cambodia, Lao PDR, and Thailand were also developed.

Hatfield Consultants Partnership (Hatfield) was contracted by the World Bank to implement key technical activities under the POPs Project. Complementary program activities are implemented by national consultants or World Bank staff. The goal of the POPs Project is to enable officials responsible for POPs management to increase their understanding and their use of risk-based approaches for managing POPs and other persistent toxic substances (PTS), and to prioritize POPs interventions to reduce local health impacts, particularly on the poor and vulnerable. Funding for the POPs Project is provided by the Canadian International Development Agency’s (CIDA) POPs Fund, and is implemented by the World Bank.

The four countries participating in the POPs Project include Cambodia, Lao PDR, Malaysia, and Thailand. However, China, Indonesia, Japan, Philippines and Viet Nam are also included in regional activities under the program.

### **1.2 TERMS OF REFERENCE AND GENERAL APPROACH**

Within the POPs Project Component 1 (Risk Assessment), Hatfield was tasked with the following: developing and applying a health risk assessment methodology to a hot spot-level risk assessment analysis; conducting an economic valuation of health impacts from POPs contamination; and, communication the health risk findings to the government. During the POPs Regional Launch Workshop which was held in Louang Prabang from 3-5 April 2008, the World Bank reiterated that, for developing countries where a strict legislative framework and strict enforcement do not exist, an economic analysis was important for convincing policymakers to take more comprehensive measures to address POPs issues and human health risks.

The World Bank highlighted that there were little data available in the four target countries for the economic analysis of the POPs hotspot case studies; this lack of data represents a major challenge to perform the tasks required. Therefore, the Hatfield Project Team focused on developing a “simplified methodology and approach” for the POPs Project economic analysis with clearly defined assumptions. Given the budget limitations for the economic analysis component, the Hatfield Project Team was advised to rely on existing data sources. The economic analysis is therefore designed to present a rough estimate of the present situation; in future, any estimates of economic impacts from POPs at the four case studies can be modified as additional data becomes available.

Conducting an economic analysis of the impact of POPs is a challenging process. While common sense suggests that there may be many benefits from a remediation effort, the cause-effect relationships that link the removal of POPs contaminants to the ensuing human health, environmental and other benefits is not scientifically established. Data, especially site-specific information, tend to be scarce. Remediation costs can only be estimated after a design has been prepared that addresses the unique problems of the site. The absence of functioning markets for environmental and social goods and services means that, even if the benefits associated with the elimination of POPs can be estimated in physical terms, it is difficult to monetize them (that is, to express them in dollar terms).

Furthermore, economic assessment is not commonly performed as part of a risk assessment of contaminated sites in western jurisdictions; if concentrations of chemical contaminants exceed accepted standards or regulations, mitigation measures to protect human health are required by law.

In developing the methodology for the present analysis, accepted economic practices and recent advances in applying such practices to chemicals management have been used as references. Adjustments to these standards were made when data gaps limited their application. Due to both the variability and the uncertainty of some data inputs, assumptions using professional judgment have also to be made. Accordingly, the economic benefits estimated from this process are sensitive to the input assumptions.

The report describes the approach developed for the economic analysis and presents the application of that approach for the AHSL site.

### 1.3 ORGANIZATION OF REPORT

The remainder of the report is organized as follows:

- **Section 2** provides a brief description of the AHSL site (see Appendix A1 for a complete description including background on POPs contamination at the site and presentation of the risk management scenarios);
- **Section 3** describes the general approach taken for the economic analysis;
- **Section 4** presents the methodology applied for assessing quantitatively the costs and benefits of the risk management scenarios, the economic analysis, and a discussion of the results;
- **Section 5** provides conclusions and recommendations;
- **Section 6** presents a list of references supporting the report; and
- Several **Appendices** support the report.