Final Report

NATIONAL ACTION PLAN ON MERCURY AND MERCURY-CONTAINING WASTES MANAGEMENT

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Environmental Management Bureau
Department of Environment and Natural Resources
DENR Compound
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List of Acronyms and Abbreviations

AO	Administrative Order
AOAC	Association of AOAC International
APHA	American Public Health Association Standards
ASGM	Artisanal and small scale gold mining
BAT	Best Available Techniques
BEP	Best Environmental Practices
BFAR	Bureau of Fisheries and Aquatic Resources
BPS	Bureau of Products Standards
BOC	Bureau of Customs
CCO	Chemical Control Order
CHED	Commission on Higher Education
CMS	Chemical Management Section
COD	Chemical Oxygen Demand
COT	Certificates of Treatment
CV-AAS	Cold Vapor Atomic Absorption Spectroscopy
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DepEd	Department of Education
DILG	Department of the Interior and Local Government
DOE	Department of Energy
DOF	Department of Finance
DOH	Department of Health
DOLE	Department of Labor and Employment
DOLE BWC	DOLE Bureau of Working Condition
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
ECC	Environmental Compliance Certificate
EELs	Energy Efficient Lighting/Lighting Systems
EMB	Environmental Management Bureau
EMB AQMS	EMB-Air Quality Management Section
EMB CMS	EMB-Chemical Management Section
EMB CO	EMB Central Office
EMB EIAMD	EMB Environmental Impact Assessment Management Division
EMB HWMS	EMB-Hazardous Waste Management Section
EMB ROs	EMB Regional Offices
EMB WQMS	EMB-Water Quality Management Section
EOL	End of Life
ESM	Environmentally Sound Management
ETE/ETV	Environmental Technology Evaluation / Environmental Technology Verification
FDA	Food and Drug Administration
FPA	Fertilizer and Pesticide Authority
GC	Governing Council
GDP	Gross Domestic Product
GES	General Effluent Standards
GNP	Gross national product
GWh	Gigawatt hour
$HgCl_2$	mercuric dichloride
$HgSO_4$	mercury-sulfate
HPLC	High-performance Liquid Chromatography

ICP-MS	Inductively Coupled Plasma–Mass Spectrometry
IEC	Information, Education, and Communication
IRR	Implementing Rules and Regulations
ITDI	Industrial Technology and Development Institute
JAO	Joint Administrative Order
LCP	League of Cities of the Philippines
LED	Light-emitting diode
LGU	Local Government Unit
LMP	League of Municipalities of the Philippines
LPP	League of Provinces of the Philippines
mg/L	milligram per liter
mg/NCM	milligram per normal cubic meter
MGB	Mines and Geosciences Bureau
MGB	Mines and Geosciences Bureau
MOA	Memorandum of Agreement
MVC	Mabuhay Vinyl Corporation
NESSAP	National Emission Standards for Source-Specific Air Pollutants
NGO	Non-Governmental Organizations
NSCB	National Statistical Coordinating Board
NSWMC	National Solid Waste Management Commission
NWRB	National Water Resources Board
OSHS	Occupational Safety and Health Standards
PNSDW	Philippine National Standards for Drinking Water
PULPAPEL	Pulp and Paper Manufacturers Association, Inc.
RA	Republic Act
SMEWW	Standard Methods for the Examination of Water and Wastewater
SMR	Self-Monitoring Report
TCLP	Toxicity Characteristic Leaching Procedure
TSD	Treatment, Storage, and Disposal
UNEP	United Nations Environment Programme
VCM	Vinyl-chloride-monomer
WEEE	waste electronic and electrical equipment
WQG	Water Quality Guidelines

1.0 INTRODUCTION

Mercury is one of the constituent elements of the earth. In pure form, it is known alternatively as “elemental” or “metallic” mercury. At room temperature, some of the metallic mercury evaporates and forms mercury vapors, which are colorless and odorless. The higher the temperature, the more vapors are released.

Mercury is characterized by several unique properties that people have found both novel and useful through the ages. For instance, it is the only metal that is liquid at room temperature and can combine with other metals to form "amalgams" or solutions of metals. It has been a part of the occult arts and human folklore and has been used in medicine as well as science and technology for millennia. Due to its unique characteristics, mercury has multi-uses as indicated below:

- As the metal (among others), used in/as:
  - Extraction of gold and silver
  - Catalyst for chlor-alkali production
  - Manometers for measuring and controlling pressure
  - Thermometers
  - Electrical and electronic switches
  - Fluorescent lamps
  - Dental amalgam fillings

- As chemical compounds (among others), used in/as:
  - Batteries (as a dioxide)
  - Biocides in paper industry, paints, and on seed grain
  - Antiseptics in pharmaceuticals
  - Laboratory analyses reactants
  - Catalysts
  - Pigments and dyes
  - Detergents
  - Explosives

Ironically, inherent to the characteristics of mercury is its high toxicity. Mercury has long been found to cause a variety of documented, significant adverse impacts on human health throughout the world. Similar to other metals, mercury does not degrade but instead accumulates in soil, water, and living organisms. It also can be transported over long distances in the air. Natural processes can convert metallic mercury into the extremely toxic methyl-mercury, which then accumulates in organisms such as fish. In the human body, methyl-mercury can be transferred to the fetus and impedes its brain development, even at low concentrations.

The problem of mercury releases is both a local and international concern. Its contamination issues are seen as a global problem. According to the United Nations Environment Programme (UNEP), which has commissioned a survey of the situation, the concentrations of mercury in the environment and in food (especially fish) are now so high as to cause damage to both humans and the environment. Even regions without any mercury releases, such as the Arctic, are adversely affected due to the fact that the metal can be transported through long distances in the air. Population groups that eat a lot of fish, shellfish, and marine mammals are particularly vulnerable.

Attributed to the increasing releases of mercury into the environment is the management aspect of mercury and mercury-containing wastes. With the foreseen decrease in demand of mercury-containing products and processes, and the increased wastes from decommissioned chlor-alkali plants, long-term storage of mercury waste (in its elemental form) and waste containing/contaminated with mercury must be urgently addressed.

Consistent with the Basel Conference of Parties' decision on the inclusion of mercury wastes as one of its strategic focused areas for the next biennium, a set of draft technical guidelines on the environmentally sound management (ESM) of mercury was developed as a collaborative effort between UNEP Chemicals and the Secretariat to the Basel Convention.

With technical assistance from UNEP Chemicals, the Philippines, through the Department of Environment and Natural Resources (DENR) – Environmental Management Bureau (EMB), has developed this National Action Plan on Mercury and Mercury-containing Wastes.

1.1 BACKGROUND AND PURPOSE OF THE NATIONAL ACTION PLAN FOR MERCURY AND MERCURY-CONTAINING WASTES MANAGEMENT

The Philippines is one of the official signatories and parties to the Basel Convention. The Basel Convention plays an integral part in the call of UNEP Governing Council (GC) for increased efforts to address mercury issues globally. One of the key priorities of UNEP GC is the search for environmentally sound solutions for the storage and management of mercury and mercury-containing wastes, considering the risk that mercury release poses to human health and the environment. Finding effective and ESM of mercury and mercury-containing wastes is therefore of prime importance.

In response to the increasing need for an ESM of mercury and mercury-containing wastes, UNEP Chemicals together with the Secretariat to the Basel Convention developed a set of draft technical guidelines on the ESM of mercury. UNEP Chemicals initiated Country Projects to test the applicability and usefulness of the draft guidelines prior to its finalization. The Philippines was selected as one of the recipients of the project as follow on to the mercury inventory it conducted using the UNEP Toolkit for Identification and Quantification of Mercury Releases.

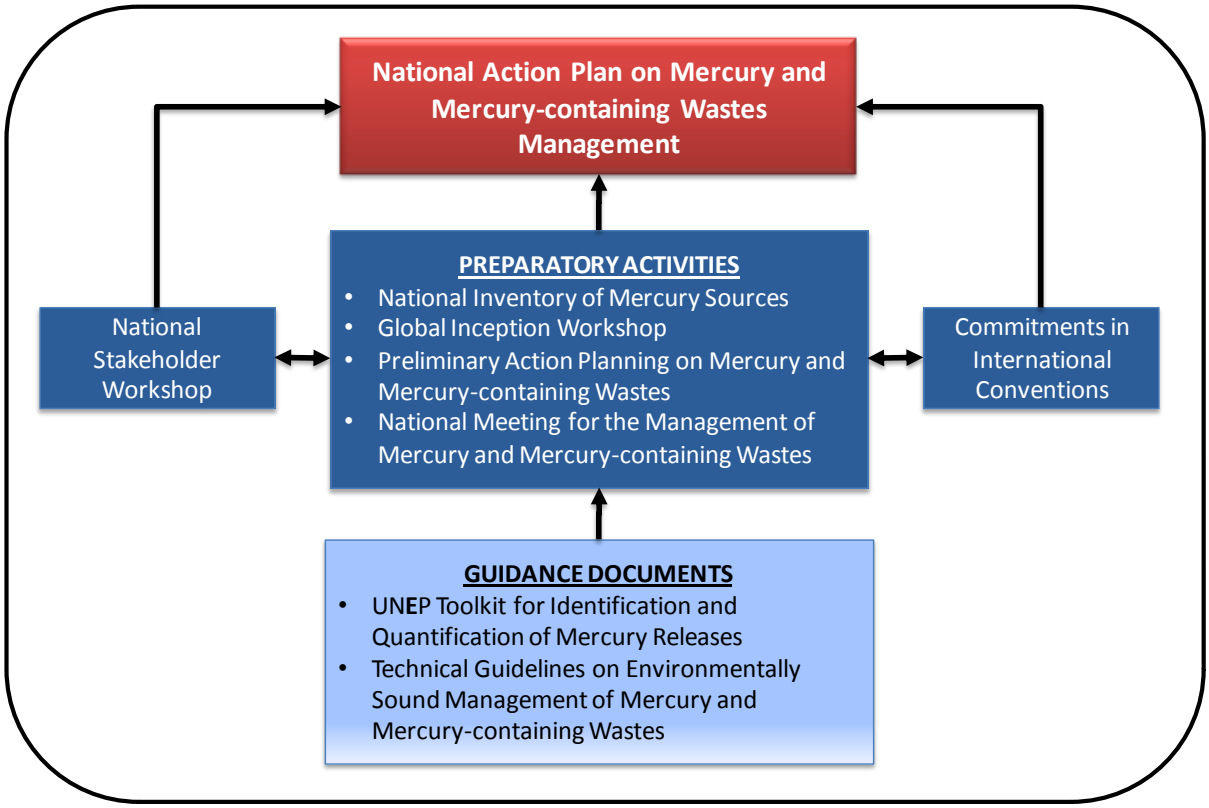
The development of a National Action Plan on Mercury and Mercury-containing Wastes Management is one of the components of the Project on Management of Mercury and Mercury-containing Wastes, implemented by DENR-EMB. It aims to provide a comprehensive roadmap and timeline towards reducing if not eliminating the risks posed by mercury and mercury-containing wastes in the Philippines. This Action Plan covers mercury waste prevention and minimization at source, collection, storage, treatment, and disposal, including protecting workers' safety and public participation.

This Action Plan identifies the existing legislative framework on mercury waste management and analyzes the regulatory improvements needed. It further identifies risk reduction measures and potential funding sources to implement, sustain, and expand ESM of mercury wastes. Moreover, this Action Plan addresses the incorporation of mercury waste minimization into the national poverty reduction strategies.

1.2 SUMMARY OF PREPARATORY ACTIVITIES

The National Action Plan on Mercury and Mercury-containing Wastes Management was developed based on the results of the preliminary activities done for the management of mercury and mercury-containing wastes. Taking into consideration the clear evaluation of existing laws and regulations and the current and future needs of the country, the Action Plan was developed to address the need for an ESM of handling mercury and mercury-containing wastes. Figure 1-1 presents the framework used for the preparation of the National Action Plan.

Figure 1-1 Framework in the Development of the National Action Plan on Mercury and Mercury-containing Wastes Management



In preparation for the development of the Action Plan, DENR-EMB conducted the