

The background of the cover features a vibrant blue-to-green gradient. A white wavy line flows across the middle, and a series of concentric green lines form a large, organic shape on the right side. An orange circle is positioned on the left side of the white wave.

MedProgramme

Document

Experience note:

PCB and Mercury Waste Management
in the Mediterranean Region

INTERNATIONAL WATERS EXPERIENCE NOTES

Regional Experience in PCB and Mercury Waste Management



Abstract:

The Chemicals and Waste Component of Child Project 1.1 under the GEF-funded Mediterranean Sea Programme (MedProgramme) was designed to reduce pollution from Persistent Organic Pollutants (POPs) and mercury in Mediterranean hotspots while strengthening national capacities for sustainable chemicals and waste management. Operating across eight Mediterranean countries, the project addressed the challenge of managing legacy PCB-contaminated equipment, mercury-containing wastes, and emerging chemicals of concern within complex institutional, regulatory, and geopolitical environments.

Through a combination of hazardous waste disposal operations, institutional strengthening, regulatory support, environmental monitoring, and regional cooperation, the project achieved significant progress toward reducing toxic chemical releases while advancing implementation of the Stockholm and Minamata Conventions. Implementation generated valuable lessons regarding contractor management, transboundary hazardous waste movements, adaptive project delivery, regional governance, and risk management. The experience demonstrates that environmental outcomes in large multi-country programmes depend not only on technical interventions but equally on flexibility, partnership building, and effective coordination mechanisms. The lessons offer important guidance for future GEF-supported chemicals and waste interventions worldwide.

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Project 1.1**

Regional Experience in PCB and Mercury Waste Management

Experience of the GEF - sponsored

GEF/UNEP: Reducing Pollution from Harmful Chemicals and Wastes in Mediterranean Hotspots and Measuring Progress to Impacts

GEFID: 9684, GEF Agency Project ID: 01533

PROJECT DESCRIPTION

The Chemicals and Waste Component of Child Project 1.1 represents one of the most technically demanding interventions within the GEF-financed Mediterranean Sea Programme (MedProgramme). The project was developed to achieve measurable reductions in toxic chemicals and hazardous wastes affecting Mediterranean coastal and marine ecosystems while strengthening national institutional capacities and environmental governance systems. The project contributes directly to the implementation of the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury, and broader Mediterranean regional environmental objectives.

Implementation took place in Albania, Algeria, Bosnia and Herzegovina, Lebanon, Montenegro, Morocco, Tunisia, and Libya through a portfolio of complementary interventions involving PCB disposal, mercury management, inventories of newly listed Persistent Organic Pollutants, environmental monitoring, regulatory development, knowledge management, stakeholder engagement, and capacity building. The project sought not only to remove existing hazardous waste stocks, but also to establish long-term institutional mechanisms capable of preventing future pollution and improving environmental governance within participating countries.

A defining characteristic of the project was its highly complex implementation environment. Activities required coordination among national ministries, environmental agencies, Basel Convention authorities, international disposal contractors, implementing partners, laboratories, consultants, regional activity centers, UN agencies, and donor institutions. Managing these interconnected actors while maintaining progress toward environmental objectives became one of the most significant aspects of project implementation.

THE EXPERIENCE

Issue

Persistent Organic Pollutants and mercury represent some of the most hazardous chemical pollutants affecting marine and coastal ecosystems globally. In the Mediterranean region, many countries continue to face legacy contamination problems associated with PCB-containing electrical equipment, obsolete industrial chemicals, contaminated oils, and mercury-bearing waste accumulated over decades of industrial activity. These substances are characterized by persistence, long-range transport potential, bioaccumulation, and serious adverse impacts on both human health and ecosystems.

The challenge is particularly acute because many countries lack sufficient domestic infrastructure for environmentally sound treatment and disposal of such hazardous wastes. As a result, disposal often requires international transport under Basel Convention procedures, coordination among multiple regulatory authorities, specialized contractors, and sophisticated logistical arrangements. Delays in any component of the process can significantly affect implementation schedules and environmental outcomes.

The MedProgramme sought to address these challenges while simultaneously strengthening national systems for chemicals management, improving monitoring capabilities, enhancing institutional capacities, and creating conditions for long-term pollution prevention.

Addressing the Issue

Regional PCB Disposal Programme

The project's largest operational intervention involved implementation of PCB disposal operations across multiple Mediterranean countries. Activities included waste inventories, contractor recruitment, preparation of environmental management plans, Basel Convention notification procedures, transportation planning, stakeholder consultations, technical supervision, and eventual export and destruction of hazardous materials.

In Algeria, the project successfully completed Phase I disposal activities, resulting in environmentally sound destruction of approximately 401 tons of PCB waste. Following Phase I completion, Phase II implementation encountered lengthy administrative authorization delays. Considerable effort was devoted to engagement with national authorities, high-level coordination missions, technical consultations, and sustained follow-up before authorization was eventually granted in July 2026. This experience highlighted the importance of maintaining long-term regulatory engagement and demonstrated that project success frequently depends on institutional coordination as much as technical execution.

In Lebanon, deteriorating regional security conditions prevented deployment of international contractor personnel. Rather than suspending implementation indefinitely, project partners developed an innovative alternative arrangement involving qualified local personnel operating under remote supervision by international experts. This adaptive management approach preserved implementation momentum while maintaining health, safety, and environmental requirements.

Additional PCB operations in Albania, Bosnia and Herzegovina, Montenegro, and Tunisia required continuous coordination among national authorities, contractors, UNOPS, UNEP/MAP, and Basel Convention authorities to overcome operational, transport, and regulatory challenges.

Mercury Waste Management

The project also implemented significant mercury-related activities, particularly in Tunisia. Activities focused on safeguarding and preparing approximately 100 tons of mercury-containing waste for environmentally sound disposal. The intervention included procurement support, technical reviews, regulatory compliance monitoring, implementation supervision, and coordination among contractors, UNOPS, and national authorities.

In addition, the project supported mercury-related technical studies, legislative development initiatives, environmental management planning, and national capacity-building activities contributing to implementation of Minamata Convention obligations.

Strengthening Institutional Capacity

Recognizing that sustainable chemicals management requires more than disposal operations alone, the project invested heavily in institutional strengthening. National authorities received support through technical studies, environmental assessments, training activities, inventories, awareness campaigns, policy

development initiatives, and guidance materials. Particular emphasis was placed on strengthening national capacities for management of POPs, mercury, and newly listed chemicals.

Partnership-Based Implementation

A key innovation was the use of multiple implementation partners, including UNOPS, MedWaves, MED POL, INFO-RAC, and several national institutions. These partnerships enabled the project to combine technical expertise, operational delivery capacity, environmental governance functions, and regional coordination mechanisms under a single implementation framework.

RESULTS AND LEARNING

The project generated substantial environmental, institutional, and operational achievements.

Environmental Results

Key achievements as of September 2026 include:

1. Algeria accounted for approximately 49% of the total hazardous waste managed under the programme through the successful disposal of 401 tons of PCB waste.
2. The safeguarding of 100 tons of mercury waste in Tunisia achieved 100% of the programme's mercury safeguarding target established under Child Project 1.1.
3. PCB safeguarding activities in Lebanon represented approximately 29% of all hazardous waste quantities managed under project disposal and safeguarding operations.
4. Operations implemented through the regional disposal programme covered six Mediterranean countries, demonstrating a significant expansion of regional cooperation on hazardous waste management.
5. Activities supported implementation of international obligations in eight beneficiary countries, strengthening compliance with both the Stockholm and Minamata Conventions.
6. The project successfully maintained implementation progress despite major regulatory, security, and logistical disruptions, allowing most disposal activities to continue even during periods of significant operational uncertainty.

Learning

The project generated several important lessons for future GEF chemicals and waste interventions.

First, implementation experience showed that regulatory and administrative approvals can account for a substantial portion of project delays. In Algeria, despite technical readiness and an operational contractor, authorization procedures delayed Phase II implementation by more than one year, demonstrating that regulatory risk should be treated as a core project management issue rather than an external factor.

Second, adaptive management proved essential. In Lebanon, security-related restrictions prevented international contractor deployment. By adopting a model based on local implementation under remote technical supervision, the project preserved environmental objectives while maintaining compliance with international technical standards.

Third, the experience confirmed that inventories alone do not deliver environmental benefits. The highest impact was achieved where inventories were directly linked to disposal operations, environmental management plans, policy reforms, and investment decisions.

Finally, regional partnerships significantly increased implementation efficiency. The engagement of specialized partners such as UNOPS enabled UNEP/MAP to focus on oversight, governance, and stakeholder engagement while operational functions were managed through dedicated implementation mechanisms.

REPLICATION

Several factors should be considered by projects seeking to replicate this experience.

First, strong national ownership is essential. Regulatory approvals, stakeholder engagement, and institutional support are often more important determinants of success than technical design alone. Projects should therefore invest heavily in building relationships with national authorities from the outset.

Second, Basel Convention procedures should begin as early as possible. Experience under the MedProgramme demonstrated that transboundary movement approvals frequently represent the single greatest source of implementation delay. Early engagement with importing, exporting, and transit authorities can significantly reduce risks.

Third, implementation arrangements should include sufficient flexibility to respond to changing operational conditions. Security disruptions, contractor limitations, political developments, and regulatory uncertainties should be anticipated during project design.

Fourth, specialized implementation partners can play an important role. The experience with UNOPS demonstrated the benefits of assigning operational delivery functions to institutions with strong procurement, logistics, and contractor management capabilities while allowing executing agencies to focus on governance, technical oversight, and stakeholder engagement.

Finally, adequate attention should be devoted to knowledge management from project inception. Establishing document repositories, data platforms, dashboards, and communication products early greatly improves institutional memory and facilitates replication.

SIGNIFICANCE

This experience is significant because it demonstrates the practical challenges and opportunities associated with implementing large-scale hazardous waste disposal programmes in a multi-country regional context.

The project generated direct environmental benefits through the removal and safeguarding of substantial quantities of PCB and mercury waste while simultaneously strengthening institutional capacities across the Mediterranean region. More importantly, it demonstrated that successful chemicals and waste interventions require integration of technical solutions, governance mechanisms, stakeholder engagement, adaptive management, and regional cooperation.

The experience also provides a valuable model for future GEF investments addressing POPs, mercury, PFAS, obsolete pesticides, contaminated sites, and other priority pollutants. The lessons learned regarding risk management, contractor supervision, Basel Convention implementation, partnership structures, and adaptive delivery mechanisms are directly applicable to many International Waters and Chemicals and Waste projects globally.

Perhaps most importantly, the initiative illustrates how regional cooperation can transform what would otherwise be fragmented national interventions into a coherent programme capable of generating lasting transboundary environmental benefits for a shared marine ecosystem.

REFERENCES

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7. MedProgramme Knowledge Management and Lessons Learned Materials.

KEYWORDS

Regional

- Mediterranean Region
- Southern Europe
- North Africa

Water Basin

- Mediterranean Sea

Topical

- Persistent Organic Pollutants (POPs)
- PCB Disposal
- Mercury Management
- Hazardous Waste
- Chemicals and Waste Management
- Stockholm Convention
- Minamata Convention
- Basel Convention
- Environmental Governance
- Regional Cooperation
- Knowledge Management
- Adaptive Project Management
- Capacity Building
- Pollution Prevention
- Transboundary Environmental Management

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