



**Interim Action Plan
for Hazardous Waste Management
in the Palestinian Territory**

This Interim Action Plan for Hazardous Waste Management in the Palestinian Territory was prepared from June to December 2011 in the framework of the Second Phase of the National Strategy for Solid Waste Management in The Palestinian Territories(NSSWM) (2010-2014) Program of GIZ GmbH by the local consultant Prof. Amer El- Hamouz and the technical team composed of representatives from MoLG, MoNE, MoH, MoA and PWA and chaired by EQA with the main responsibility of supporting, facilitating and following up implementation of this project.

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Preface / Acknowledgement

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Acronyms and Abbreviation

BOD	Biological Oxygen demand
COD	Chemical Oxygen Demand
EIA	Environnemental Impact Sassement
EQA	Environment Quality Authority
EU	European Union
JSC	Joint Service Council
HZW	Hazardous Waste
MoA	Ministry of Agriculture
MoF	Ministry of Finance
MoH	Ministry of Health
MoHE	Ministry of Higher Education
MoLG	Ministry of Local Government
MoNE	Ministry of National Economy
MoT	Ministry of Transportation
NHWMP	National Hazardous Waste Management Plan
NSSWM	National Strategy for Solid Waste Management in The Palestinian Authority (2010-2014)
PCBS	Palestinian Central Bureau of Statistics
UNEP	United Nations Environment Program
PT	Palestinian Territory

1 Executive Summary

Assessment of the existing situation revealed that there is an urgent need for handling hazardous waste as it poses serious negative impact on health and environment, which require urgent attention. The NSSWM indicates the need for developing a national strategic plan for hazardous waste management in the PT. The development of a short term action plan for hazardous waste management that considers the necessary measures and action to reduce risks on health and environment based on the available data and the accomplished reports as an interim plan is a precondition for developing such plan.

EQA, since it has been given this mandate by the NSSWM, along with the support of GIZ initiated a project for the *Development of an Interim Action Plan for Hazardous Waste Management in June 2011* in order to be proactive and to further improve management of hazardous waste in the most cost effective as well as technically and environmentally acceptable solutions to hazardous waste management in the PT. A Technical Team composed of MoLG, MoNE, MoH, MoA and PWA and chaired by EQA was formed with the main responsibility of supporting, facilitating and following up implementation of this project.

The definition and classification for hazardous waste were introduced by the sister project *"Drafting a List and Categories of HZW in the Palestinian Territory"* and were prepared by EQA, a technical team and local consultancy with the assistance of GIZ . The list and the underlying principles were applied within the scope of this *"Interim Action Plan for HZW Management in the Palestinian Territory"*.

The underlying principles, on which the Interim Action Plan for Hazardous Waste Management for PT is based universal principles (and key strategic objectives) set out by the NSSWM in the Palestinian PT 2010-2014:

- Focus on sustainable environmental protection and public health;
- Policy and legislative framework;
- Adequate HZW collection services;
- Communication and information dissemination hazardous waste information management;
- Regular awareness-raising about hazardous waste management;
- Enforcement of relevant legislation;
- Implementation of the 'Polluter Pays Principle' and total cost accounting; and

The key challenges and /or deficiencies identified with regard to HZW management in the PT include the following:

- Poor HZW management due to insufficient regulations (no existing HZW by law) and inability to enforce them.

- Weak, soft or uneven enforcement of environmental law discourage industries from reducing pollution streams that contain HZW.
- A lack of awareness of hazardous waste issues across the PT industry, for priority waste streams in particular.
- Absence of HZW treatment and disposal sites.
- There is no HZW recycling facilities and waste exchange activities.
- Absence of HZW transfer stations.
- The need to explore alternative delivery mechanisms for HZW facilities such as public/private partnership.

In order to adequately address solution to the above shortfalls, this action plan is proposed in two parts:

The first part comprises of general actions to improve hazardous waste management and control. It outlines the general requirements based on the inventory data from the UNEP 2010 report and other published data. It addresses general short-comings and future needs for improvements in the field of legislation, policy and economic instruments, procedure for compliance and control of HZW handling, data base and inventory of HZW, infrastructure measures, capacity building, communication and information dissemination by the authorities.

The second part of the action plan addresses management measures for the leather industry and galvanizing industry, which are chosen by the technical team as the priority hot spot areas to focus actions on.

2 Introduction

Over the past several years, research work on the Solid Waste Management (SWM) carried out by several international & national agencies working in the Palestinian Territory (PT) such as UNEP, UNDP, GIZ (formally GTZ) and others have indicated that the issue of harmful substances and hazardous wastes are a priority for PT. This growing issue is of great magnitude and with major potential negative impact on health and environment of the people of the PT. This resulted in the endorsement of the *National Strategy for Solid Waste Management (NSSWM) in the Palestinian Territory 2010-2014* by the Ministerial Cabinet in May 2010. It is the first cross sector strategy for the solid waste management (SWM) in the PT. This leading project was supported by the GIZ solid waste management program (SWM).

During the preparation process of the NSSWM, EQA in cooperation with UNEP conducted an inventory study on HZW (HZW) entitled "*The inventory Phase of the Development of a National Master Plan for HZW Management for Palestinian Territory*". This pioneer report includes an overview of types and estimated quantities of HZW and environmental pollution produced by the industrial sector as well as other sectors in the Palestinian Territory; it also identifies hot spots areas and provides general guidelines for HZW management. In order to fully understand and implement the HZW management issue, EQA has requested the assistance of GIZ in developing this "*Interim Action Plan for HZW Management in the Palestinian Territory*". It should cover a period of a 3 years and is based within the framework of the above mentioned study and other related studies. A Technical Team composed of MoLG, MoNE, MoH, MoA and PWA and chaired by EQA was formed with the main responsibility of supporting, facilitating and following up on this "*Interim Action Plan for HZW Management in the Palestinian Territory*". The action plan proposes measures related to the the generation, handling, storage, treatment, disposal and record keeping of HZW.

3 Scope

West Bank of the PT is set to be the geographical coverage area of the plan. The hazardous waste streams, type and estimated quantities generated in the West Bank was detailed in the UNEP 2010 report. Medical HZW will be excluded in this study as it was previously included in the Master Plan for Medical Waste Management developed by the MoH.

The time horizon of the plan is set to be three years. It is divided into 36 months, (M). Each action in the implementation plan is distributed over a given period in months (M).

The development of a National Master Plan for HZW management for the PNA (UNEP 2010) showed the necessity for drafting of a list and categories of HZW in the PT. An efficient waste classification system is an essential prerequisite and important cornerstone for setting up the HZW management action plan. Therefore, HZW classification was based on its sister project titled "*Drafting a List and Categories of HZW in the Palestinian Territory*". This hazardous waste list was prepared by EQA, a Technical Team and local consultancy with the assistance of GIZ and applied within the scope of this "*Interim Action Plan for HZW Management in the Palestinian Territory*".

This interim action plan for HZW management is focuses on actual HZW generation, waste stream management and analysis of the current HZW management situation in the West Bank of the PT. The top 10 hot spot hazardous waste generators was outlined and further analysis was carried out to outline the two most urgent hot spot areas for the application of technical and management measures to be taken to improve environmentally sound preparing for re-use, recycling, recovery and disposal of HZW.

The action plan is of two parts; the first part is general hazardous waste management plans that outline the general requirements for managing the hazardous waste. It addresses overall improvement actions on legislation, institutional development, enforcement capacities and monitoring, data base and inventory of HZW, infrastructure measures and finally communication and information dissemination by the authorities. The second part of the action plan comprises of more detail technical and management measures for leather industry and galvanizing industry which are chosen by the technical team as the most two urgent hot spot areas. It is based on the inventory data from the UNEP 2010 report and other published data and applies the recently introduced classification criteria for hazardous waste.

It is anticipated that the information published in UNEP (2010), the open literature, accomplished studies review and assessment and those provided by the HZW generators with regard to the HZW management practices contain gaps, which were filled by on- site visits and closer investigations in the process of preparation of this action plan.

4 General Objectives

The main objective of this work is the protection and safety of the environment through efficient and effective interim action plan for HZW management.

The generation of HZW is an inevitable consequence of development and therefore it will not be possible to eliminate its generation altogether, however concerted effort must be made to move **towards “zero HZW” in the long term**. Efforts in planning the interim HZW management must thus be concentrated on cleaner production and the waste management which favors, in the following order of preference, waste avoidance minimization, reuse, recycling, treatment and disposal being the last resort.

5 Existing Situation

5.1 Legal Basis

Based on Article 1 of the Environmental law (1999), hazardous substance and HZW are defined as:

“Hazardous Substance: Any substance or compound, which because of its hazardous characteristics poses a danger on the environment as toxic, radioactive, biologically infectious, explosive or flammable substances.”

“Hazardous Waste: waste generated by the various activities and operations or the ash thereof, which preserve the characteristics of hazardous substance which have no uses, such as atomic waste, medical waste, or refuse emanating from manufacturing of pharmacological products, medicines, organic solvents, dyes, painting, pesticides or any other similar substance.”

In dealing with hazardous materials (substance) and waste, Article 11 of the Environmental Law 1999 indicates that there is a further need to work on classification and listing of hazardous materials and wastes, by stating in article 11 that “The Ministry, in coordination with the specialized agencies, shall issue one or more lists of hazardous substances and wastes”. In addition to the above, article 12 in this law forbids any one from handling (manufacturing, storing, distributing, using, treating, disposing) hazardous materials or waste except according to the regulations and instructions determined by the Ministry (EQA) in coordination with the competent parties. Therefore, Articles 11 to 13 provide an excellent framework for identifying, processing, storing, distributing, using, treating or disposing hazardous materials and their waste; however these by-laws have not been issued yet. The environmental law did not ignore the pesticides and the agricultural fertilizers; hence its management is stated clearly in Articles 14 and 15 of the environmental law.

In summary, the PT environmental law has been observed to be fragmented and contains various types of problems, including one or more of the following:

- 1) Very ambitious laws and standards that are still not in force;
- 2) although there is a department of HZW at EQA, it still needs power;
- 3) lack of appropriate institutional support for implementation and enforcement of the law and clarification of responsibilities of different stakeholders with respect to HZW management.

5.2 Existing Hazardous Waste Management Practices

Nablus, Ramallah and Hebron districts are the major contributors to manufacturing production, contributing between them more than 80% of total manufacturing production in the West Bank therefore most of the HZW generated in the West Bank are in these districts.

In order to adequately address the current and future needs for identifying best practices and opportunities for the PT, the risks and challenges associated with current practices of hazardous waste management in the PT is summarized below.

5.2.1 Avoidance of Hazardous Waste

The avoidance of the generation of hazardous waste by way of product changes (e.g. product composition or substitution of input materials), source control (e.g. implementing (GMP) good manufacturing practices, changing technology into clean Technology) was not seen to be practiced in the PT.

5.2.2 Hazardous Waste Generation

Although a preliminary inventory data about the HZW generated in the PT was presented in UNEP (2010) report, it is extremely difficult to accurately predict the HZW generation rates in the PT due to the fact that until recently no classification system for hazardous waste and no hazardous waste list was available and in use and it is not mandatory for companies to report on their generation rates. This means that generated HZW could hardly be monitored by or reported to EQA or the relevant ministry. This is exacerbated by the fact that so far disposal sites and treatment facilities (if any) are not legally permitted or registered by any local authority or ministry.

5.2.3 Hazardous Waste Recycling

Lack of hazardous waste separation at source is one of the impediments to recycling of hazardous waste streams. The lack of HZW recycling opportunities is explained partially by the lack of regulations and implementation of regulations regarding HZW and the underestimation of the value of produced waste. The hazardous waste streams generated by industry are very diverse for all sectors to be able to come together on their own and form a recycling body outside of government initiatives.

A number of recycling initiatives are underway (used tires, used vehicle oil), some of which seems to have a good potential, and however some have limitations. The limitations include primarily the collection of recyclable goods from the outlying areas.

Specific recycling activities may not be economically feasible because of relatively low volumes as compared to substance specific recycling activities. To name an example for recycling is the tanning process where hydrochloric acid can be taken away by third parties for recycling. The filter cake sludge that eventually gets formed out of the sector's effluent management practices consists of chrome, and some acids that could potentially be recycled depending on the relative concentrations.

5.2.4 Hazardous Waste Storage

In general most HZW generator facilities have no special storage areas. It is only the pharmaceutical and aluminum profile production industries that store their HZW for further treatment and

disposal by a Israeli company. In most cases the HZW are mixed and disposed with municipal waste.

5.2.5 Hazardous Waste Collection and Transportation

Currently only a few private contractors collect used vehicle oils for sale to other businesses. There are rare cases where private Israeli HZW collectors and transporters work in the PT areas; it is not monitored by EQA or any other authority. The amount of HZW generated from the PT industries is not that much and therefore, the transportation of small volume of HZW for the permitted HZW disposal areas in the Israeli areas could not be economically, although environmentally sound hence HZW produced in remote areas are not being correctly disposed.

5.2.6 Hazardous waste Treatment

No real treatment facilities exist except in the pharmaceutical and aluminum profile industries where their HZW are stored in suitable containers and are carried out by a registered HZW transporter for proper treatment in Israel. These two sectors do export their products outside the PT and therefore have to be in line with regulations imposed on them for exporting their products internationally.

In general, the treatment of the generated HZW in the PT has to be promoted. From the inventory data of UNEP (2010) report, it is clear that the HZW generated has a variety composition and its volume may not justify, economically or operationally, the construction of a separate treatment facility.

5.2.7 Hazardous Waste Disposal

From several site visits carried out by the consultant to the Palestinian industrial sectors, it was found that there are no means for HZW disposal facilities neither for strategic disposal plans.

The absence of differentiation between the solid waste and HZW collection fees imposed by the municipality encourages HZW generators not to think about finding special HZW disposal methods and consequently disposed their HZW either in the front/back yard of their premises, or in the MSW containers. A collection fee is only depending on land area rather than type of waste. HZW generators found it cheap to dispose the HZW in the solid waste container rather than treating recycling it.

6 Action plan regarding general hazardous waste management

6.1 Legal Framework

6.1.1 Objectives

Strengthening of the regulatory, authorization and enforcement role of the PT authority in HZW management.

6.1.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Preparation of a hazardous waste legal framework	EQA, MoLG, MoH (MOH, PWA as observers), Ministry of Energy, MoA	EQA	M1-M3
1.1	Development of a HZW By-law	EQA, MoLG, MoH (MOH, PWA are observers), Ministry of Energy, MoA	EQA	M1-M3
1.2	Preparation of technical standards and procedures for registration, licensing and monitoring of HZW generators, transporters and facilities, in the scope of the by- law.	EQA, MoLG, MoH, MoA	EQA	M2
1.3	Adopt/insert procedures and penalties in the legal framework to ensure the efficient prosecution of environmental offenders	EQA, MoF, MoLG, MoNE	EQA	M12-M13
1.4	Adopt/insert "Polluters Pays" principle in the legal framework to ensure proper financing of HZW management and disposal	MoF, MoF, MoNE, MoLG, MoA	MoNE	M10-Ccontinuous
2	Preparation of a legal framework for hazardous chemical materials	MoNE, MoLG, , MoF (custom authority), MoA, MOH as an observer	EQA	M6-M12

6.1.3 Indicators for Success

- Hazardous waste legal framework is prepared by 2013
- Endorsement of the HZW by-law in 2013/2014

6.2 Policy and Economic Instruments

6.2.1 Main Objectives

Improve HZW related services for industry and municipalities.

6.2.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Promote public-private partnerships, private sector ownership and operation, and cost shared provincial, district and municipal agreements with regard to sharing equipment, facilities and the development of educational materials and programs.	EQA, MoF, MoNE, MoLG, MoA	MoLG	M12-M24
2	Support of the JSCs to include HZW services in their portfolio and allow special charges for HZW services rendered	MoLG, MoF	MoLG	M9-M12
3	Explore the use of economic instruments which support the "Polluter Pays Principal" i.e. waste related taxes, fees, charges etc	MoF, MoNE	MoNE	M12-M24

6.2.3 Indicators for Success

1. The establishment of private/public HZW transports by the first quarter of 2013.
2. Adoption of clean technology that minimizes HZW by the middle of 2013.
3. Development of at least one private/public treatment facility by end of 2013.

6.3 Procedures for Compliance and Control of HZW Handling

6.3.1 Main Objectives

Ensure co-ordinated and uniform compliance monitoring and enforcement.

Improve the separation of HZW and reduce the amount of HZW mixed with non HZW delivered at landfills.

6.3.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Prepare compliance monitoring and auditing forms	EQA, MoLG, MoNE, MoH	EQA	M3-Continuous
2	Produce identification / labeling methods for all containers and vehicles used to store and transport HZW	EQA, MoLG, MoT, MoH, MoA	EQA	M4- M7
3	Assign hazardous waste to disposal and treatment methods	EQA, MoLG, MoA	EQA	M10-M12
3.1	Enlarge the guideline on the Palestine Hazardous Waste List with recommendations on disposal and treatment methods and identify facilities.	EQA, MoLG, MoNE, MoA	MoLG	M3-M15
3.2	Enlarge the guideline on the Palestine Hazardous Waste List with recommendations for safe handling procedure.	EQA, MoLG, MoNE, MoH, MoA	EQA	M12
3.3	Enlarge the guideline on the Palestine Hazardous Waste List with identification and procedures for exports of HW.	EQA, MoLG, MoNE, MoT, MoH, MoA	EQA	M12-M16
4	Register and accredit HZW service providers	EQA, MoLG, MoNE, MoH	EQA	M3-Continuous
5	Promote self-regulation through the establishment of partnerships with manufacturers and retails.	EQA, MoLG, MoH, MoA	EQA	M3-M6
6	Facilitate regular contact between the various spheres of stakeholders to ensure coordinate and effective enforcement of HZW management plan by exchanging information and regular meetings.	EQA, MoLG, MoNE, MoH, MoA	MoLG	M3-Continuous
7	Collaborate with the industrial sector to separate HZW from non-HZW (and transfer HZW to centralized storage/suitable disposal facilities, when they exist)	EQA, MoLG, MoNE, MoH	EQA	M12-M20
7.1	Conduction various awareness programs	MoLG, EQA, MoH, MoA	EQA	M12-M13
7.2	Promotion of tax exemption for industrial sector abides with HZW management.	MoNE, EQA	MoNE	M12-Continuous

6.3.3 Indicators for Success

- Reduction of the amount of HZW mixed with non HZW received at solid waste landfills in 2013
- On site implementation of HZW separation in at least 5 factories by 2014
- Achieve good record keeping and self monitoring compliance by 30% of the HZW generators
- Develop permitting procedures and assignment of waste for HZW transporters, treatment and disposal facilities to be in place by 2013

6.4 Database and Inventory of HZW

6.4.1 Main Objectives

Overview on HZW generators, transporters and treatment and disposal facilities

Increase HZW generator's capacity to identify HZW.

Disseminate first data on HZW amount, type, storage, treatment and disposal facilities for PT authorities.

6.4.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Preparation of lists of HZW generators, transporters, treatment and disposal facilities inside and outside PT	EQA, MoLG, MoT, MoNE, MoH, MoA	EQA	M5-M10
2	Register the annual amount of generated HZW	EQA, MoLG, MoNE, MoA	MoLG	M3-M5
2.1	Establish cooperation with statistical office	EQA, MoLG, PCBS MoH, MoA	PCBS	M5 onwards
2.2	Prepare standard questionnaire for annual survey	EQA, PCBS	PCBS	M4 onwards
2.3	Implementation of an electronic register, data base for HZW	EQA, MoNE, MoLG	EQA	M6-continuous
3	Implementation of a periodical inventory on HZW	EQA, MoLG	EQA	M12, M24, M36
3.1	Inform stakeholder about survey	EQA, MoLG	EQA	M10, M22, M34
3.2	Implement survey	EQA	EQA	M12, M24, M36

6.4.3 Indicators for Success

- Registered waste transporters and treatment and disposal facilities by 2013.

- First HZW inventory data on generated HZW is recorded and registered by end of 2014.
- Published HZW data by PCBS by the 2014

6.5 Infrastructure Measures

6.5.1 Main Objectives

Provision of a compliant and cost effective hazardous waste storage, treatment, disposal or export systems to meet the needs of safe final HZW disposal.

Development of small hazardous waste transfer stations at strategic locations in the PT where the waste is separated and bulked for transfer to permitted HZW disposal facility or even directly to permitted recycling facilities.

Establish regional collection points and interim storage capacity to encourage HZW generators to abide with the HZW law.

6.5.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Feasibility study on a centralized HZW storage/s, regional collection points.	EQA, MoLG, MoF, MoA	MoLG	M12-M18
2	Establishment of Interim Storage Capacity for HZW	EQA, MoLG, MoH	MoLG	M12-M20
2.1	Clarify ownership and site selection	EQA, MoLG	EQA	M12-M13
2.2	Obtain environmental impact assessment or licenses	EQA, MoLG, NoA	EQA	M13-M14
2.3	Construction of HZW interim storage	MoF, EQA	EQA	M15-M20
3	Establish regional collection points for hazardous waste	EQA, MoT, MoLG	MoLG	M12-M18
4	Establish HZW transfer stations	EQA, MoLG, MoF	MoLG	M14-M20

6.5.3 Indicators for Success

- EIA approved for the development of interim storage capacity by end of 2013.
- Development of two centralized HZW storage areas, one in the north and one in the south of the PT by the year 2014.
- At least 50% reduction of the final disposal of HZW in the regional (Zahrat alFinjan, and Al Minya) landfills by the second quarter of 2013.

6.6 Capacity Building

6.6.1 Main Objectives

Train inspectors, member of staff of the HZW department and stakeholders on HZW classification, management, control and emergency/spill response to improve separation and handling of HZW in industry.

6.6.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Training on the application of HZW list and waste classification	EQA, MoLG, MoNE, MoH, MoA	EQA	M4
1.1	On-job-training EQA inspectors for HZW management issues	EQA,	EQA	M5
1.2	Training member of staff of HZW department on general HZW management	EQA, MoH	EQA	M1, M3-M6
2	Training stakeholders for HZW management	Ministries, JSCs and water authority and industries related	EQA	M8,M14,M20
3	Training on export of HZW according to Basel Convention	EQA, MoNE, MoLG	EQA	M4-M9
4	Training on OHS and emergency/spill response	EQA, MoLG, Universities	EQA	M3-M9
5	Education and awareness programs on effective enforcement with municipal officials	EQA, MoLG, MoNE, MoH	EQA	M3-Continuous

6.6.3 Indicators for Success

- More than three officers are trained in HZW classification and control by mid 2012.
- More than three member of staff of the HZW department are trained on HZW classification by mid 2012.
- More than five stakeholders are trained in HZW management issues by mid 2012.

6.7 Communication and Information Dissemination by the Authorities

6.7.1 Main Objectives

Strengthened communication between all stakeholders with regard to information dissemination of HZW management.

6.7.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Research, benchmark and develop website page for HZW information	EQA, MoNE	EQA	M4
2	Establish a HZW reference centre at EQA	EQA	EQA	M6-M15
2.1	Continue information hotline	EQA, MoLG, PWA, MoH	EQA	M6-M10
2.2	Promotion of the use of less hazardous materials	EQA, MoNE, MoH, MoLG, private sector, MoA	EQA	M12-M18
2.3	Promotion of public awareness of HZW issues, risk and precaution	EQA, MoH, MoA	EQA	M3-continuous
2.4	Disseminate information to stakeholders regarding waste minimization opportunities (recycling, waste exchange)	EQA, MoLG, MoNE, MoH, MoA	EQA	M3-continuous
2.5	Promotion of awareness of consequences of poor HZW management (including health and safety impacts)	EQA, MoLG, MoNE, MoH, MoA	EQA	M3-continuous
2.6	Inform the waste generators on treatment and disposal methods / facilities on the web and by the hotline	EQA, MoLG, MoH	MoLG	M12-M16
3	Initiate information desk in all stakeholders' ministries, publish information leaflets, guidelines fact sheets (on HZW of concern, recycling, in-situ treatment).	EQA, MoLG, MoNE, MoH	EQA	M3-M6
4	Produce educational materials and conduct education and awareness campaigns.	EQA, MoLG, MoH, MoNE, Universities	EQA	M3-M6

6.7.3 Indicators for Success

- Website page is initiated by the middle of 2012 and continuously upgraded.
- HZW reference centre at EQA and HZW Information desk is in operation by the middle of 2012.
- Information leaflets on waste management are regularly published on the website.

7 Action plan on Palestinian Hazardous Waste Hot Spots

7.1 Selection of 2 hot spots for this action plan

Based on the inventory HZW study presented in the UNEP (2010), the technical team prioritised ten industrial sectors that produce HZW streams which require urgent attention and proper HZW management program.

To narrow the list and identify two of these hot spot areas for further contemplation in this action plan, a hot spot selection criteria matrix was formulated taking into consideration the following: HZW potential, quantity, quality (based on assessment for the UNEP Report 2010), potential for prevention, possibility of on-site storing HZW, ease of monitoring the HZW, willingness to cooperate in providing required data and voluntary implementation of the activities to be suggested by the interim action plan for HZW management. For each item, a scoring method was applied by technical team to prioritize the hot and the highest ranking three spots were identified as preliminary identified hot spot areas. Then the technical team could recommend additional hot spot areas, so that “Galvanizing, metal manufacturing including Aluminium and steel wire manufacturing” was also included as the fourth potential hot spot. Further refinement was carried out in recommending the four identified hot spot areas shown in **Table 1**.

The pharmaceutical HZW, which was ranked at the top of the list at first, was decided to be disregarded by the technical team. This decision was based on the fact that pharmaceutical industry already has a management system for HZW in place which includes treatment and disposal systems and therefore does not need urgent action in comparison with other hot spots. It was agreed to include agrochemical HZW, which comprises of mainly the empty fertilizer/pesticides packaging and expired pesticides, in the final list.

Table 1: Further differentiation between the identified hot spots

Criterion	Galvanization	Tanning	Vehicle	Agriculture chemical waste
Number of enterprises and their distribution	4 in Hebron, one in Nablus, one Ramalah	12 in Hebron, one in Salfeet	Distributed with unknown numbers	Distributed with unknown numbers
Amount of HZW	5-10 tones/month	Around 10tones/month	Unknown	unknown
Separation requirements	Additional 6 containers	Additional 2 containers	Unknown	unknown
Possibility for cooperation	Ready	ready	Un certain	Un certain

Financial requirements/obligation	Limited	limited	Un certain	Un certain
Possibility of control and environmental inspection	Highly possible	Highly possible	Impossible	Impossible

“Galvanizing” and “Tanning and Leather Industry” were selected as the two final hot spot areas to be further contemplated by this action plan.

7.2 Leather Industry – Hazardous Waste related Actions

7.2.1 Main Objectives

To separate HZW from non-HZW in order to reduce the amount of solid and/or sludge HZW disposed in the municipal waste containers.

Change current practice of HW packaging management.

Actions

	Topic	Concerned:	Lead:	Time frame
1	Improve management of contaminated packaging	MoLG	MoLG	M6
1.1	Recommend reusable, returnable or refilled packing	MoLG	MoLG	M8-continuous
2	Installation of suitable bin containers for the collection of HZW	MoLG	MoLG	M2
3	Feasibility of alternatives for certain low-pollution process such as salt trashing, hair saving, green fleshing, water based or solvent to coat, Cr-reduction etc).	EQA, MoH	EQA	M2-M6

7.2.2 Indicators for Success

- Decrease in number of contaminated packages by the middle of 2012.

7.3 Leather Industry –Solid Waste related Actions

7.3.1 Main Objectives

To apply the HZW minimization /reuse / waste exchange of solid waste out leather industry.

7.3.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Improve separation and reuse of waste hides and leather scraps	EQA, MoNE, MoLG, MoA	EQA	M4-M8

2	Analyse the feasibility of scrap and cutting solid waste reuse to be used as raw materials.	EQA, MoNE, MoH, MoLG, MoA	EQA	M3-M5
3	Market and feasibility study for secondary material use (establishing recycling industry)	EQA, MoNE, MoLG, MoA	MoNE	M8-M12

7.3.3 Indicators for Success

- Waste exchange activities is initiated by middle of 2012
- Minimize the amount of solid waste thrown in the municipal container by the first quarter of 2012.

7.4 Leather Industry - Pollution related Actions

7.4.1 Main Objectives

To prevent discharge HZW/pollutant streams from tanning industry to municipality sewage system.

To recover chromium waste discharged to main sewage system.

7.4.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Improve wastewater treatment	EQA, PWA, MoH, MoLG, MoA	PWA	M6-M8
2	Improve understanding where waste occurs (input/output process approach)	EQA, MoLG, MoH	MoLG	M4-M6
3	Rehabilitate the waste water treatment for the recovery and reuse of chromium	EQA, PWA, MoH	EQA	M2-M5

7.4.3 Indicators for Success

- Ability to discharge wastewater to near wadies after treatment or reuse in irrigation by 2013.
- Ability to reduce total waste out of tanning industry.
- Reduce the COD and BOD to the Palestinian standard acceptable level (150 and 50ppm respectively) by the first quarter of 2013.
- At least 75% reduction of the amount of fresh water used in tanning due to re use of water by the third quarter of 2012.
- Deduction of amount of chromium used by a value equals the minimum amount required for efficient tanning by the end of 2012.

7.5 Leather Industry: cooperation related Actions

7.5.1 Main Objectives

Involve leather industry ownership to cooperate and have input in the implementation of the interim action plan.

Provide more incentives for premises which abide with the HZW management action plan.

7.5.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Build a partnership program with governmental organizations	EQA, MoNE, MoH	MoNE	M2, M6, M15
2	Provide research fund to incorporate the most recent scientific and technical HZW minimization knowledge	MoF, MoNE, Universities	Universities	Continuous
3	Open a dialogue between tanneries owners and the government representatives (EQA, MoNE, MoLG, PWA)	EQA, MoNE, PWA, MoLG, MoH	EQA	M3-onwards
4	Provide awareness program for the economical/environmental/ health benefits of applying clean technology	Universities, EQA, MoH, MoLG, MoA	Universities	Continuous
5	Provide incentives (tax re fund) for premises that minimize HZW	MoF, MoLG, EQA	MoF	
6	Provide research fund for utilizing waste in producing new products	EQA, MoNE	MoNE	M6-M8, M14-M18

7.5.3 Indicators for Success

- More researches on the utilization of waste in producing new products are jointly published between tanneries owners and universities by end of 2013.
- New products manufactured from waste are available in the market by end of year 2012.

7.6 Galvanizing Industry: Hazardous Waste Related Actions

7.6.1 Main Objectives

To reduce the amount of waste acid and acidic rinse water out of the galvanizing process.

To reduce the amount of sludge disposed illegally by the galvanizing industry.

7.6.2 Actions

	Topic	Concerned:	Lead:	Time frame
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1	Improve treatment of spent baths	EQA, PWA, MoH, MoLG, MoA	EQA	M5-M7
1.1	Feasibility study of building an on-site neutralization/physical-chemical treatment unit	EQA, MoNE, MoH, MoLG, MoA	MoNE	M3-M5
2	Introduce interim storage for sludges	EQA, MoLG, MoH	MoLG	M4-M6
3	Promote cleaner production by adjusting the operating conditions.	EQA, MoNE, MoH	MoNE	M12-M16

7.6.3 Indicators for success

- At least 50% reduction of sludge waste by the end of year 2014
- Establishment of on-site neutralization/physical-chemical treatment unit by end of 2013.

7.7 Galvanizing Industry: Awareness related campaign Actions

7.7.1 Main Objectives

Inform the galvanizing owners about the environmental/health impact of the galvanizing process.

Train the galvanizing owners how to work with emergency spills of chemicals.

7.7.2 Actions

	Topic	Concerned:	Lead:	Time frame
1	Produce educational awareness materials on the environmental impact of galvanization process	Universities, EQA, MoH, MoLG, MoA	MoH	Continuous
2.	Conduct training on the OHS and emergency spills of galvanization effluent liquid	Universities, EQA, MoH	EQA	Continuous

7.7.3 Indicators for Success

- Produced awareness leaflet on the environmental impact of galvanizing industry by the 2013.
- At least four galvanizing premises owners are trained on the emergency spills of galvanizing effluent liquid by the first quarter of 2012.