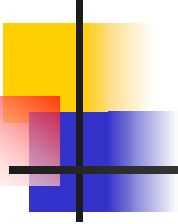


Risk Assessment and Monitoring for Environmental Chemicals



Final Report
Presented by
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Uganda



Contents

- Purpose of training
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- Action plan
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Purpose of Training

The National Environment Statute 1995 Part IV, section 24 mandates the National Environment Management Authority (NEMA) to monitor:

- **All environmental phenomena with a view to making an assessment of any possible changes in the environment and their possible impacts;**
- **The operations of any industry, project or activity, with a view to determining its immediate and long-term effects on the environment**



Purpose of Training

Samples are generally collected for one or more of the following purposes:

1. To judge compliance with and/or progress made towards meeting standards.
2. To activate emergency control procedures that prevent or alleviate water, air and soil pollution.
3. To observe pollution trends throughout the country, including non-urban areas.
4. To develop a database for evaluation of pollution trends and abatement strategies.



Purpose of Training

DEMC, NEMA designed pollution-monitoring program to meet basic monitoring objectives listed below:

- to determine pollutant concentrations discharged by various sources against existing standards.
- to categorize industries and other pollution sources according to levels of concentrations of pollutants discharged.
- to generate information that can be used for enforcement of national standards.



Purpose of Training

- Learn about risk assessment technology for environmental contaminants
- Get knowledge on impacts of environmental contaminants on human health and ecosystems
- Study the principles and techniques for monitoring environmental chemicals
- Acquire analytical skills in instrument, immunoassay and bioassay methods
- Learn about waste management and environmental standards for Japan in relation to Uganda
- Obtain a general understanding of environmental pollution through study visits and tours.



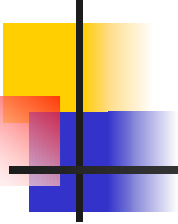
Environmental Monitoring

Instrumental

- GC, GC/MS
- HPLC, LC/MS
- ICP, ICP/MS
- AAS
- TOC Analyser
- UV-Visible Spectrophotometer
- IR Spectrophotometer
- Fluorescence Spectrophotometer

Simplified Analysis

- Detector paper/ Test paper
- Pack test / Ample test
- Gas Detector Tube – VOCs
- Packed column – portable spectrophotometer
- ELISA Immune Assay



Environmental Monitoring

Instrumental

- High sensitive
- Expensive
- Complicated / skilled operation

Simplified Analysis

- Low sensitive
- Cheap
- Easy operation

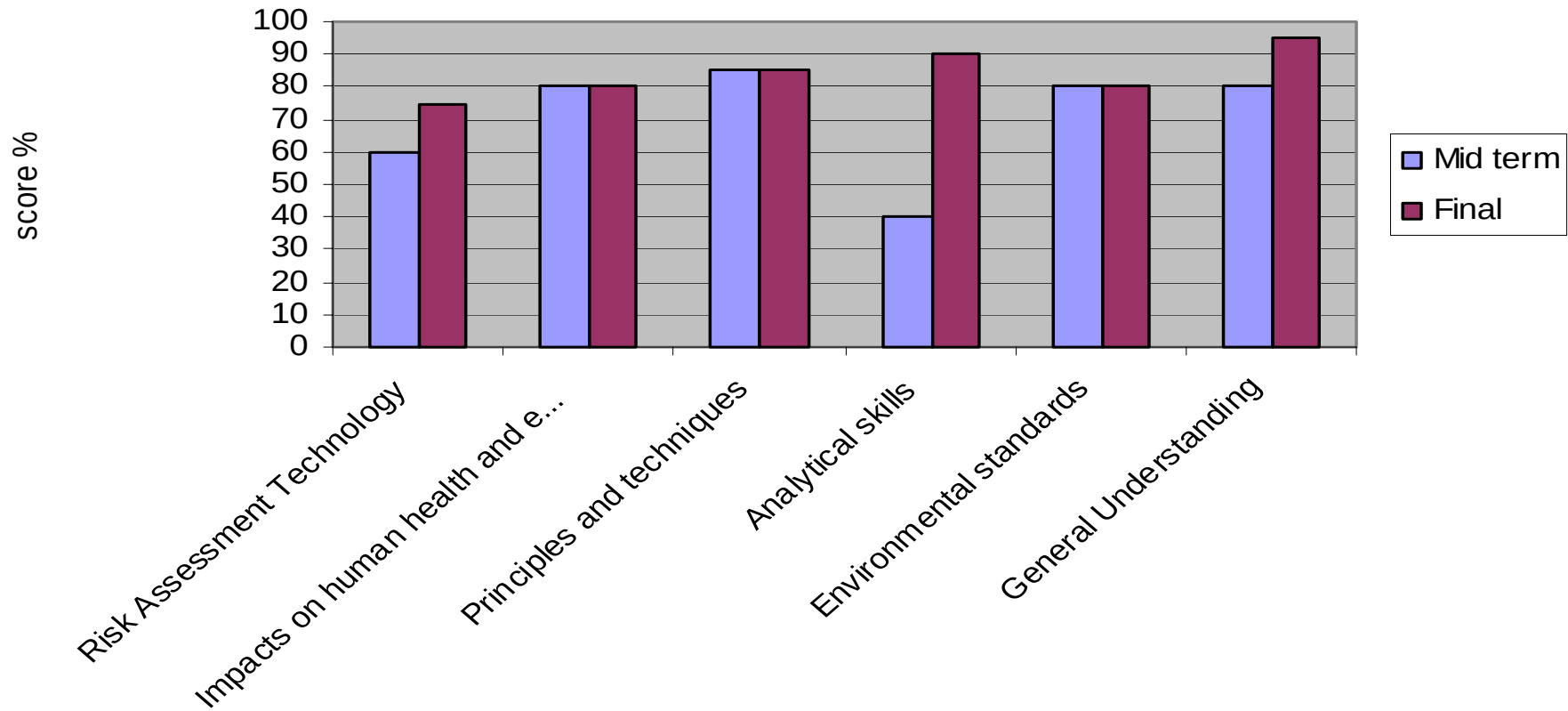


Assessment

	Objective Ranking		
		Mid term	Final Score
1	Risk Assessment Technology	60	75
2	Impacts on human health and ecosystem	80	80
3	Principles and techniques	85	85
4	Analytical skills	40	90
5	Environmental standards	80	80
6	General Understanding	80	95

Assessment

Objective achievement





Action Plan

AP001: Development of manual for analysis of environmental contaminants (both rapid and instrumental methods of analysis).

AP002: Prepare Laboratory for Rapid Analysis

AP003: Analysis

AP004: Standards development

AP005: Training

AP006: Review



AP001: Development of Manual

- Develop manual for the physio-chemical analysis for on spot environmental monitoring
- The manual shall include rapid and instrumental analysis of environmental chemicals, heavy metals, pesticides residues and EDC,s.
- The manual shall be comprehensive consisting of already ongoing activities in my Laboratory in Uganda. These activities has been mainly nutrients, pH, DO, EC, Ca, Mg, etc
- The work on manual development has already started and I have completed more than 50% of what is required here in Japan.



AP002: Prepare Laboratory for Rapid Analysis

- These shall include:
 - Check reagents / portable equipment current available and acquisition of reagents / equipment not available
 - collection of information
 - visits to industrial and agricultural areas
 - discussions with District Environment Officers, Inspectors and NEMA staff



AP003: Analysis

- This involves
 - collection
 - preservation
 - measurement and
 - analytical procedure of the samples (NEMA acquired two Land lovers specially designed for sampling and preservation and spot checks)
 - arranging for more accurate analysis for samples that are non-compliant with Uganda regulations and laws



AP004: Standards development

- Air Quality:
 - Establish criteria and procedures for measurement of air quality
 - Improve
 - Ambient air quality standards
 - Occupational air quality standards
 - Emission standards from various sources
 - Criteria and guidelines for air pollution control for both mobile and stationary sources
 - Guidelines to minimise pollution from green house gases and assist in identification of suitable technologies to minimise air pollution



AP004: Standards development

- Water Quality:
 - Review the existing water quality standards including standards for the discharge of any effluent into the waters of Uganda and effluent treatment.

AP004: Standards development



AP004: Standards development





AP004: Standards development

- Noise and Vibration:
 - Establish guidelines for the vibrations and subsonic vibrations



AP004: Standards development

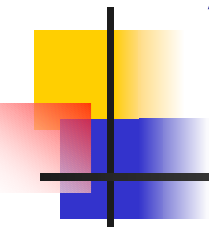
- Soil Quality:
 - Establish guidelines for soil quality especially with regards to agricultural chemicals

AP004: Standards development



AP004: Standards development





AP004: Standards development

- Solid waste:
 - Guidelines for solid waste disposal and management of Landfills



AP005: Training

- (OJT) Environmental Inspectors, in a seminars, workshops and field & laboratory measurements.
- Districts with major industrial and agricultural activities and training of environmental inspectors in these districts and equip them with reagents / equipment for rapid environmental monitoring.
- Organise workshop in cooperation with (NWSC) and UCP for wastewater treatment and invite people from factories and municipalities. The design, management and operation of the wastewater treatment plant and landfills using Japan as a case study.
- Experiences learned from Industrial pollution in Minamata using Video

Training at Work Stations



Training: Sewerage ponds in upcountry towns





AP006: Review

- Monitoring program
- Review the data obtained from environmental monitoring
- Effectiveness of training program
- Manual



Conclusions

- All course objectives were achieved both as designed for the course and according to the ministry of Water, Lands and Environment in Uganda
- The skills acquired shall guarantee the Ugandans the right to a clean and healthy environment.



Conclusions

- The level of detail of the course was relevant to the needs of Uganda and to my Job in particular.



Recommendations

- Invite more Ugandans to come and attend this very important course
- I would suggest that the following be included in the course:
 - ISO 14000 series of standards
 - Application of EMS in Japan Industries using studies
 - Good Laboratory Practice



Thanks

- Course leader for the design and Management of the course
- Lectures and facilitators for your time to share with us your experiences and skills
- HPIPHES, HPTCAFF, Kobe Quarantine Station, Hyogo Pref. Govt (ENV. Bureau) etc for accommodating us to have our studies
- Japan for extending official development assistance (ODA) program to Uganda and JICA for Implementation of Japan's technical cooperation under ODA programs
- JICE for the excellent coordination of the course
- HIC for creation of a home away from home



Congratulations

- To all the participants for having successfully completed the course
- To the Coordinator Ms. Rika Kojima for the outstanding performance on your job. You need a special status as a coordinator