INTRODUCTION TO THE IAMC TOOLKIT

The United Nations Industrial Development Organization's (UNIDO) overarching objective is to reduce poverty through **Inclusive and Sustainable Industrial Development** (ISID). Attaining ISID in developing countries and economies in transition means that: 1) every country achieves a higher level of industrialization in their economies, and benefits from the globalization of markets for industrial goods and services, 2) no one is left behind in benefiting from industrial growth, and prosperity is shared among women and men in all countries, 3) broader economic and social growth is supported within an environmentally sustainable framework, 4) unique knowledge and resources from all relevant development actors are combined to maximize the development impact of ISID.

In response to this global challenge, UNIDO launched the **Green Industry Initiative** with the aim of fostering the positive role of industry in achieving sustainable economic growth. According to UNIDO's Green Industry vision, the role of industry is to constantly provide creative and innovative solutions and alternatives to national economies, focusing on a well-balanced economic, environmental and social impact of industry. Sustainable development has indeed become a core determinant of economic competitiveness and allows industries to decouple their economic growth and revenues from excessive and increasing resource use and pollution by minimizing waste in every form, using renewable resources, and taking precautions to avoid harming workers, communities as well as the environment.

Under the Green Industry Initiative, the project "**Innovative Approaches for the Sound Management of Chemicals and Chemical Waste**" (IAMC) facilitates the implementation of innovations in the production and application of chemicals in order to reduce the consumption of chemicals, energy and water while improving the sound management of chemicals and reducing risks related to chemical accidents.

This toolkit provides the documentation and tools required to perform innovation assessments in order to identify potential improvements and to implement solutions. It is targeted towards specific industrial groups and will notably help **synthesis companies**, **formulators** and **industrial users of chemicals.** The toolkit includes several technical resource packages (TRPs) and presents solutions, best practices and examples from OECD countries. However, it is not intended to set standards. Instead companies are advised to give priority to legal standards, yet if no national legal framework is available, the **recommendations** provided in this toolkit can be used.

The toolkit presents an overview of a variety of valuable tools and techniques and emphasizes operational excellence. By its goal and scope, it is distinct from other tools that provide recommendations on a larger scale, such as APELL (Awareness and Preparedness for Emergencies at Local Level) and the Responsible Production (RP) approach, both developed by the United Nations Environment Programme (UNEP), or the National Occupational Safety and Health Programming Guidelines issued by the International Labour Organization (ILO).

Methodology

- The methodology provides a step-by-step guide to setting up, evaluating and implementing innovative solutions at company level.
- It includes the identification of innovative projects, the screening, evaluation and prioritization of innovative solutions as well as the implementation of the selected innovative options.

Technical Resource Package 1

- The first package provides an overview of best practices and methods to identify potential for innovation.
- This package presents integrated solutions to reduce chemicals consumption, substitute hazardous chemicals and reduce chemical waste.

Technical Resource Package 2

- The second package provides an outline of chemical hazard management in the chemical industry and the industrial application of chemicals in order to identify and understand the potential hazards and risks related to products and operations in companies.
- This package covers topics such as risk assessment, fire protection, explosion prevention, the safe use, transport and storage of chemicals, the use of personal safety equipment, safety rules as well as emergency response planning. Practical solutions that companies can undertake to limit the occurrence of dangerous situations are presented throughout the module.

Technical Resource Package 3

- The third package provides an introduction to sustainable enterprise management with an emphasis on operational excellence and management techniques as well as innovative business models like chemical leasing as a way to reduce the environmental impact and costs of companies in the chemical industry.

INTRODUCTION TO THE IAMC TOOLKIT

Toolkit Content

Methodology - Innovative Approaches for the Sound Management of Chemicals and Chemical Waste

B11 Get started
B12 Assess chemicals management hotspots & customer unmet needs

B13 Generate innovative options
B14 Select options

B15 Implement & monitor
B16 Review & continuously improve

Identify & Implement Innovative Options

Technical Resource Package 1: Green Chemistry & Chemical Process Improvement

C0 Overview
C1 Green Chemistry
C11 Introduction to green chemistry techniques

C12 Substitution of chemicals
C13 Secondary raw materials

C2 Chemical Process Improvement
C21 Resource efficiency potential
C22 Cleaning of process equipment and products

Technical Resource Package 2: Hazard Management

D0 Overview
D1 Risk Identification and Safety
D11 Chemical classification and labelling
D12 Risk identification
D13 Safety rules
D14 Personal protective equipment
D15 Skin protection
D16 Emergency escape ways
D17 Solvents, acids, bases handling
D18 Safety in gas tank handling

D2 Transport and Storage
D21 Internal transport of chemicals
D22 Internal pedestrian routes
D23 Storage
D3 Fire and Explosion Protection
D31 Fire protection
D32 Fire protection in welding and cutting operations
D33 Explosion protection
D34 Container cleaning
D4 Emergency Response

Technical Resource Package 3: Operational Excellence

E0 Overview

E1 Introduction to Operational Excellence

E2 Value Stream Mapping in the Chemical Industry

E3 Production Planning & Optimization

Sector Guidelines and Case Studies