

# Experience of Uganda Cleaner Production Centre in promoting Green and Sustainable Chemistry in Uganda



# Uganda Cleaner Production Centre(UCPC )

## Profile

- UCPC was established in October 2001
- Situated on Plot M217, Jinja Road, Nakawa
- Capacity building in CP in the Public and Private Sectors
- Member of a family of over 50 NCPCs worldwide
- Member of ARSCP and Global RECP-net

# Programmes promoted by UCPC in the area of Green and Sustainable Chemistry

- 1) Global promotion, adaptation and application of innovative Chemical Leasing business approaches for sound chemicals management.
- 2) Promotion of Innovative Chemicals Management Approaches (IAMC).
- 3) Guidance development and case study documentation of green chemistry and technologies.
- 4) The Global GreenChem Innovation and Network Programme.

# Impact of promoting IAMC in SRNL

- A team was set up to oversee the implementation of IAMC.
- Using the IAMC toolkit, three chemical management hotspots were. i.e
  - i. High chemical usage in dyeing as a result of unreliable power resulting in rework and reprocessing,
  - ii. Dyeing-process control, failure to monitor and regulate dying process parameters appropriately results in second quality fabric (faint shades) which requires addition of more dye and reprocessing to make fabric obtain a better shade and
  - iii. Procurement of dye, the type of dye procured determines the amount of energy, water and chemicals used.

# Implemented IAMC options in SRNL

- Invested USD 300,000 to switch to continuous dying process generating annual savings of USD 300,106. Due to reduced; water usage by 50,112m<sup>3</sup>/yr, chemical consumption by 14,400L and energy use.
- Invested USD 150,000 to install a Spectro photometer, lab dyer and colour data machine. Annual saving amounted to USD 182,702 from reduced; reprocessing by 90%, water usage by 5,047m<sup>3</sup>/yr, chemical usage by 3,645L/yr and energy savings of 1,306,368kWh/yr.

# A case of ChL implementation in the Beverage Sector

- A beverage sector is one of the most water intensive and thus discharges large volumes of effluent.
- CBL is a beverage company operating under PEPSI COLA International franchise.
- In December 2013, it decided to integrate ChL model in its operations closing working with Diversey with a goal of improving efficiency in water and chemical usage.
- ChL was successfully introduced to 3 processes i.e; Conveyor lubrication, bottle washing and Final rinse
- The business model changed from CBL paying for volumes of chemicals used to Lts of beverage produced.

# Continuation

Before Chemical Leasing:	Uganda Shillings per litre or kilogramme of chemicals purchased
After Chemical Leasing:	Uganda Shillings per litre of beverage produced



*Waste water foaming before Chemical Leasing*



*Foaming eliminated after implementation of the model*

# Achievements

## Before Chemical Leasing

- High water consumption both in bottle and case washing (116,000 m<sup>3</sup> per year) and conveyor belt lubrication (29,000 m<sup>3</sup> per year)
- High consumption of sodium hydroxide (500 kg per day)
- The soap based lubricant required additional cleaning and produced a high amount of foam in the effluent treatment plant and thus caused high treatment costs
- Overstepping of relevant waste water discharge reference values
- Lack of appropriate chemicals storage rooms
- Poor management of obsolete chemicals at plant level

## After Chemical Leasing

### Environmental benefits:

- Chemical use in bottle washing and conveyor belt lubrication reduced by 40% and 48%, respectively
- Water consumption for the conveyor lubrication reduced by about 13,000 m<sup>3</sup>
- Less consumption of chemicals in the waste water treatment plant
- Compliance with the waste water discharge standards
- No more overconsumption of sodium hydroxide
- Less energy consumption resulting in reduced CO<sub>2</sub> emissions (about 150 tons per year)



# Continuation

## Economic benefits:

- Economic savings of \$350,000 per year
- Long-term business partnership
- Improved stock management

## Social benefits:

- Better working environment with reduced chemical spillages
  - Reduced risk of chemical injuries due to substitution of solid sodium hydroxide by a diluted one
  - Constant information exchange between the supplier and the user of chemicals
  - On-site technical support from chemicals supplier to train the company's employees
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**Thank you for your  
attention**



**UGANDA CLEANER PRODUCTION CENTRE**