SAFE USE OF CHEMICALS IN THE TANNERY INDUSTRY IN UGANDA

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ENSURING SUSTAINABLE DEVELOPMENT

NATIONAL ASSOCIATION OF PROFESSIONAL ENVIRONMENTALISTS
NAPE

FOREWORD

This booklet has been developed by the National Association of Professional Environmentalists (NAPE) to help raise awareness about toxic chemical exposure as a serious national and local concern in the Tannery industry and empower workers in the industry to demand for personal protective equipment (PPE) because the tannery industry uses a lot of chemicals which puts workers at a great risk of serious health effects.

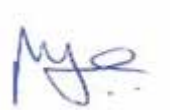
This is part of the many national campaigns to strengthen National Institutional Capacity in sound management of Chemicals and wastes in Uganda with emphasis on how to minimize and eliminate the harm resulting from toxic chemical exposure.

The booklet highlights the current chemicals management situation in most of the Tanneries in Uganda including poor handling / treatment of hazardous wastes, exposure of workers to chemicals without protective equipment; and how the effluents from the industry can affect human health and the environment. The booklet also highlights relevant laws and policies that could be used to regulate the use and exposure to toxic chemicals in the Industry. It concludes with recommendations for promoting safety and good practices in the Tannery industry.

The development of this booklet has been done in collaboration with National Environment Management Authority (NEMA) under the project, "Strengthening Institutional National Capacity in Sound Management of Chemicals and wastes in Uganda" with financial support from UN Environment.

I would like to thank members from NAPE and NEMA who tirelessly contributed to putting this booklet together.

I believe that the information in this booklet will be a valuable tool for the Tannery industry to pave a way towards Safe use of chemicals for good health, safe environment and better products.



Frank Muramuzi,
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The tannery industry.

Uganda is well endowed with natural resources. Livestock is one of the major natural resources in Uganda and it contributes about 5.2% and 12% of the total Growth Domestic Product (GDP) and agricultural GDP respectively.

In Uganda, the raw materials for leather; the hides and skins, are usually by-products of the meat industry and are mainly derived from either urban or rural slaughter of cattle, sheep and goats. However, like many other countries in sub-Saharan Africa, Uganda is faced with the challenge of sustainable management of its tannery industry. Over the years, the country has been producing leather and other leather products but with limited regulation of the tannery industry.

The industry has therefore contributed to serious environmental pollution especially through the disposal waste (solid waste contaminated with chemicals and realease of poorly treated effluents) directly into the environment. In recent times, some tanneries have been indefinitely closed while others at one time or the other have received caution or temporary closure from the responsible government agencies.

What is a tannery?

A tannery is an industrial set up where hides and skins are processed into leather.Tanning hides and skins into leather involves a process which permanently alters the protein structure of hide/skin, making it more durable and less susceptible to decomposition.

What does turning skins and hides into leather involve?

Leather tanning is a process of converting decomposable hide/ skin into leather that is usually non decomposable in a short term. This is usually done using a series of chemicals in a controlled environment.
Leather tanning is important for converting hides and skins into usable materials for production of leather-based consumer products. The tannery industry is one of the most chemical and water intensive industries.

Industrial effluents from the tannery industry are a major environmental and health concern in many African countries including Uganda.

Tannery waste waters contain large quantities of organic and inorganic compounds; including toxic substances such as chromium salts. Tannery effluents can have negative effects on the physical, chemical and biological properties of the receiving surface water.

Poorly treated effluents from the tannery industry that is used for irrigation purposes lead to wide spread contamination of food chains, sharp decline in productivity of food crops, soil, vegetables, livestock and even milk production.

Key things to know about the tanneries in Uganda.

Most of their disposal practices are not in compliance with environmental safety requirements and waste disposal protocols or laws.

There is a lot of smell and pollution from the tanneries.

Because of heavy pollution (resulting from waste of poorly treated tannery effluents) the quality of water diminishes seriously delimiting communities' access to clean and safe water for human consumption and for aquatic life.

Some of discharge of highly polluted and inadequate treated wastewater find their way into Lake Victoria and other water source. (LVEMP, 2002)

The lack of information among workers in tanneries and communities about possible harm from the chemicals used in tannery industry exacerbate their risks.

Waste water from tanneries directly affects the soils and end up in drinking water sources through leaching into the ground water table.

Most tanneries face management problems of their wastes, including storage, transportation, treatment and disposal of such effluent.Heavy metals contamination of surface and ground drinking water has grave public health implications.

Chromium, lead, zinc and copper are examples of metals that have been found in sediments affected by tannery effluent.

Most of their disposal practices are against environmental safety and waste disposal protocols or laws.

The majority of the people handling chemicals in the leather tanning industry are ignorant of the process and the impacts of the chemicals to their heath and the environment.

Most workers in the tannery industry work without protective gears/ wear.

Waste water from tanneries directly affects the soils and can end up in drinking water sources through leaching into the ground water table.

Chemical use in tannery industry.

The leather-tannery industry in Uganda is steadily growing a fact that has led to increased use of leather tanning chemicals. However, sound management of chemicals which is an essential component of sustainable development of the tannery industry in Uganda is still inadequate.

Tannery waste water is heavily polluted containing appreciable biodegradable matters as well as inorganic substances like chromium, sulphide, chloride et cetera (Goswami and Mazumder, 2014). Tannery effluent is among the most hazardous industrial pollutants due to its huge organic and inorganic load, which is highly toxic to human life and environment (Horsfall and Spiff 2005; Kongjao et al. 2008).

Chromium is very toxic to micro-organisms (protozoa, protophyta, fungi, algae, bacteria) at greater than 0.05 mg/litre and it inhibits their growth at lower concentrations (NEMA, 2009).

Workers should not be exposed to tannery chemicals without protective gear

The need for knowledge and skills on leather-tannery regarding chemical use, storage, transportation and legislation is critical. Similarly, the need for managing chemicals and other forms of wastes from the leather tannery industry is important.

Handling and treatment hazardous wastes:

Most tanneries lack the capacity to develop appropriate measures to handle and dispose off effluents in a more socially and environmentally acceptable manner.

Why should we be concerned about tanneries?

They discharge untreated or poorly treated tannery effluents in Water. Tanneries generate a lot of potentially hazardous chemical wastes. In most tanneries, solid and liquid wastes are discharged in natural water streams and open lands. These effluents increase the amount of Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) and the pH of water by increasing its toxicity ((Chattha and Shaukat, 2003)

Effluents from tanneries affect our soils

Some tanneries directly dump their effluents or untreated Water into the soil. Poisonous chemicals and waste water effluents, seeps into the soil and changes the composition of the soil. Consequently, soil fertility may be reduced and the soil pH changed.

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Waste water from tanneries directly affects the soils

Major tannery effluents include a number of heavy metals like:

Chromium is the main tanning agent in chrome tanning process (Venier et al., 1985). Chromium and sulfide are among the most hazardous effluent of the tanneries. The use of excessive amount of these chemicals in tanning process gives rise to their high concentrations in the effluents (Kathrine and Schwedt, 1994). Others include Arsenic, Zinc and Cadmium.

Impacts on human health and the environment:

Some of the chemicals used in the leather-tannery industry are known to be carcinogenic or causing cancer and therefore are a potential threat to human health and the environment.

The toxic heavy metals from tanneries enter the food chain and water putting at risk the health of communities and the environment.

In most tanneries, solid and liquid wastes are discharged in natural water streams, open lands.

Untreated or partially treated wastewater generated by the leather industry can pose a serious threat to the ecosystem and if discharged in water bodies, can cause eutrophication and water pollution with serious effects on aquatic life (NEMA, 2005)

Effects of the tannery Industry on the workers and to the surrounding communities.

Most tanneries have inadequate protective gear for the workers to protect them against harmful aspects of the chemicals used. Some employees lack even the simplest form of protection.

Visitors to these tanneries are often allowed to move freely in the industry with no protective gear.

The decomposing organic wastes and the consequent bad smell from the industry greatly affect the surrounding communities

Aworker exposed to the risk of harmful chemicals at one of the tanneries in Jinja

Government's efforts to regulate chemicals use in the tannery Industry.

Over the years, the country has been producing leather and other leather products but with limited regulation of the tannery industry.

There have been challenging issues in the industry regarding environmental pollution from tannery effluents. This has led to some of the tanneries being indefinitely closed while others at one time or the other have received caution or temporary closure. For instance, in 2010 inspectors from the National Environment Management Authority (NEMA) recommended the closure of two leather factories located in Jinja district, approximately 600 metres from Lake Victoria (NEMA, 2010).

Residents of Jinja town demanded closure of the two tanneries because of a stench that was suspected to be emanating from the wastewater treatment plants of the two tanneries hence causing Air Pollution around Jinja town. This therefore implied that there were inadequacies in waste water management practices.

In March 2008, the National Water and Sewerage Corporation (NWSC) closed off all sewage lines from two leather-tannery industries, which had persistently refused to comply with set effluent standards. Earlier on, government had closed the leather tannery in Mbarara district for failure to meet the required environmental standards. All this was aimed at putting right the challenges and problems associated with the industry that was greatly affecting economic and environmental benefits from the leather-tannery industry.

In 2015, government passed a policy on the National Leather and Leather Products. The policy is supposed to help in regulating leather tanning, the export of raw (wet blue) hide/ skin and set procedures on how the animals are skinned and transported to maintain the quality of the skins before processing.

NAPE and other Civil Society organisations have been creating awareness on safe use of chemicals in the Tannery industry.

A partnership with NEMA has been built to implement activities that aim at ensuring safe use and management of chemicals in the tannery industry like developing awareness raising materials.

The government of Uganda through the relevant ministries and regulatory agencies have enacted a number of laws and policies to assist in effectively monitoring and addressing challenges associated with the leather -tannery industry. These include among others;

Policy and legal framework related to tannery and chemical management in Uganda

Relevant laws

The Constitution of the Republic of Uganda 1995

The Constitution of the Republic of Uganda 1995 is the supreme law in the country upon which all other laws are drawn. It has a number of provisions referring to trade, human health and the environment.
These include:

The government of Uganda is required to take all measures to prevent or minimize damage and destruction to land, air, and water resources resulting from pollution or any other kind of natural resource degradation.
The State is required to take all practical measures to promote a good water management system at all levels;

The state is required to promote sustainable development and public awareness of the need to manage land, air, water resources in a balanced and sustainable manner for the present and future generations;

Some of the tanneries in Uganda

No	Name	Product	Location of the industry.
1.	Uganda Leather Industries Ltd,	Jinja Wet blue and finished leather	Jinja district
2	Sky Fat Tannery Co. Ltd (SFT)	Wet Blue Hides and Wet Blue Skins	Jinja district
3	Novelty Investment Tannery Ltd	Wet blue and Hides/skins	Masaka district
4	Uganda Fish Leather Tannery Ltd, Jinja	Crust and finished skin from Nile Perch	Jinja district
5	Elgon tannery	Wet blue and Hides/skins	Masaka District
6	Jambo tannery	Wet blue and Hides/skins	Busia District
7	SWT Leather Industry	Wet blue hides and skins	Ntinda industrial area

Source: MTIC, 2015

Under Article 39 every person has a right to a clean and healthy environment;

Under Article 40(1) the Parliament is required to enact laws to provide for the right of persons to work under satisfactory, safe and healthy conditions

Article 245 Parliament is required by law to provide for measures intended to protect and preserve the environment from abuse, pollution and degradation; to manage the environment for sustainable development; and to promote environment awareness.

The National Environment Management Policy for Uganda, 1994: The policy aims at promoting sustainable social and economic development. It addresses the Control of Pollution as well as the management of domestic and industrial waste and hazardous materials. The main objective of the policy is to control pollution of water, land and air from domestic, commercial, industrial and other emissions and discharges, and promotes environmentally sound management of wastes and hazardous materials.

The National Environment Act, No.5 of 2019: The National Environment Act is the most significant law on the management of chemicals and the environment. Under the act, discharge of hazardous substances into any part of the environment except with the guidelines of the National Environment Management Authority is prohibited;
The Act prohibits pollution contrary to established standards. prohibits the illegal traffic of hazardous wastes; and gives any person generating hazardous wastes the duty of managing his/her wastes.

Occupational safety and Health Act No 9, 2006:

This Act provides for the safety and health of persons at work such as in factories, plantations and businesses. The Act provides for measures such as, labeling of dangerous materials, guarding against dangerous machines, training of persons to work at any dangerous machine. Section 96 provides for the provision of required chemical data sheets containing essential information 9 regarding the identity of the chemical, its hazards, safety precautions, emergency procedures and its supplier.

The Role of Key Stakeholders in the tannery industry

Ministry of Water and Environment (MWE) This Ministry is in charge of coordinating, promoting and ensuring sustainable utilization, development and safeguard of water and the environment for sustainable socio-economic development. The key institutions under this ministry include:
a) National Environment Management Authority (NEMA) NEMA was established under the Ministry of Water and Environment. It was set up under the National Environment Management Act Cap 153 LOU. NEMA is mandated to oversee, coordinate, supervise and monitor all activities in the field of the environment. It coordinates the implementation of Government policy and the decision of the Policy Committee. It also ensures the integration of environmental concerns; including chemical trade, in overall national planning through co-ordination with the relevant ministries, departments and agencies of Government.

Recommendations for proper environmental management to the tannery operators/owners and Government.

In order to improve the environmental management of tanneries and lower environmental and human health impacts, the following minimum environmental management measures are recommended to implement in any tannery .

Aworker in a tannery industry with protective gear

There is need to provide appropriate personal protection equipment (PPEs) to workers.

There is need for the industry to identify and promote actions that are aimed at reducing the amount and/or toxicity of chemicals.
The practice of reducing chemical use should be encouraged so as to minimize the costs of waste treatment and the risks of such waste to human health and the environment.

This will need prudent chemical management practices in the leather-tannery industry to help minimize the quantities and risks of the chemicals being used.

There is need for cooperation between the different tanneries so that they can be able to learn from each other's experience for improved production, management of human health and the environment.

Some tanneries are already treating and recycling their wastes, this is a good practice that can be replicated in others.

Safe management and disposal practices of hazardous chemical wastes from the industry should be promoted including clustering of tanneries to promote construction modern effluent treatment plants.
There is need for sensitization of communities on the dangers associated with wastes from tanneries.

Government, NEMA and Civil Society organizations together with other stakeholders should monitor activities of leather-tannery industries and loosely work with them for improved production.

There is need for comprehensive research on effluents from tanning processes to determine the pollution loads, their impacts and how the negative impacts can be mitigated.

Ensure tannery employees/workers are trained and aware of how to minimize water usage and waste water generation.

Ensure end of pipe waste water is properly treated and meets effluent discharge standards as this leads to reduction in toxins entering the environment.

Government and its lead agencies should provide awareness and training programmes on sustainable leather production; focusing on effluent management and treatment, management of health risks from the plant and the management of environment pollution

Sensitize industry players in the relevant environment laws and regulations.

Promote establishment of common effluent treatment plants to encourage industrial clustering that provides benefits from economies of scale in waste management.

Train and equip managers and technicians in appropriate waste management techniques and skills.

Develop, review and enforce the relevant laws, regulations, guidelines, standards and codes of practice pertaining to environmental protection and compliance

Recycling and reuse of waste water, stop disposing off hides and skins pieces together with waste water as it causes stench.

Other awareness campaigns on sound management of chemicals use and wastes of NAPE.

NAPE has been carrying out a series of awareness campaigns and workshops on sound use, management and disposal of chemicals and chemicals wastes including mercury, pesticides and kaveera, their impacts on human health and the environment in many communities and schools (both primary and secondary) in Kampala, Hoima, Masindi and Kiryandongo districts.

NAPE has also held radio talk-shows and debates on national and local radio stations on the impacts of chemicals and wastes on health and the environment.

The aim of involving school going children is to model them along the lines of sound management of chemicals so that when they are out of school and in charge of big offices especially related
to the environment and health, they know how to better deliver as responsible citizens.

At local level, NAPE has mobilized and help communities to form groups, grassroot associations and Community-Based Organizations (CBOs) on Sound Chemicals Management. And this is because when they are in groups, they are easy to mobilise and senstise. In 2010, NAPE formed and is hosting a National Network on Sound Management of Chemicals ((NESMAC-U), to which the loose grassroot networks and groups on Sound Use and Management of Chemicals are affiliated.

SAFE USE OFCHEMICALS IN TANNERY INDUSTRY

Conversion of solid waste Into useful products

Recycling and reuse of waste water

Use of environmental friendly Chemicals

Clean Technology

Clean Technology

Raw Hide

Finished Products

Process

Volatile Organic compounds

Solid Waste

Industrial effluents

Incerination

Leaching

Air Pollution

Bioaccumulation in the ecosystem and distribution of the food web

Toxic Chemicals in the ecoysystem