

THE IMPACTS OF THE FLOWER INDUSTRY ON ENVIRONMENT AND PEOPLES LIVELIHOODS IN UGANDA



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Acronyms

ACB	Agriculture Chemicals Board
ADI	Acceptable Daily Intake
CICS	Competitiveness Investment Climate Strategy
CSO	Civil society organization
CUE	Critical Use Exemptions
DDT	Dichlorodiphenyltrichloroethane
EAC	East African Community
EIA	Environment Impact Assessment
EPC	Export Promotion Council
FAO	Food and Agriculture Organization of the United Nations
FIRI	Fisheries Research Institute
FUE	Federation of Uganda Employers
GHS	Globally Harmonized System
HSSP	National Health Sector Strategic Plan
ICCM	International Conference on Chemicals Management
ILO	International Labour Organisation
ILRF	International Labour Rights Fund
JECFA	Joint FAO/WHO Expert Committee on Food Additives evaluates food additives
JMPR	Joint FAO/ Meeting on Pesticide Residues
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MFPEd	Ministry of Finance Planning and Economic Development
MGLSD	Ministry of Gender, Labour and Social Development
MJCA	Ministry of Justice and Constitutional Affairs
ML	Maximum Levels
MoH	Ministry of Health
MPS	Milieu Programma Sierteelt
MRL	Maximum Residue Levels
MTTI	Ministry of Tourism, Trade and Industry
MWE	Ministry of Water and Environment
NAADS	National Agricultural Advisory Services
NAARI	Namulonge Agricultural and Animal Production Research Institute
NAPE	National Association of professional Environmentalists
NARO	National Agricultural Research Organisation
NDA	National Drug Authority
NEMA	National Environment Management Authority
NMS	National Medical Stores ()
OUA	Organization of African Unity
OHS	Occupational Health Services
PCB	Polychlorinated Biphenyls

PCNB	Pentachloronitrobenzene
PHC	Primary Health Care
PIC	Prior Informed Consent Procedure
PMA	Plan to Modernise Agriculture
POP	Persistent Organic Pollutants
PPE	Personal Protective Equipment
PSFU	Private Sector Foundation Uganda
SAICM	Strategic Approach to International Chemicals Management
SPS	Sanitary and Phytosanitary Sanitary
TBT	National Technical Barriers to Trade
UBOS	Uganda Bureau of Statistics
UFEA	Uganda Flower Exporters Association
UHAWU	Uganda Horticulture and Allied Workers Union
UMA	Uganda Manufacturers Association
UNBS	Uganda National Bureau of Standards
UNCED	United Nations Conference on the Environment and Development
UNEP	United Nations Environmental Programme
URA	Uganda Revenue Authority
USA	United States of Africa
USAID	United States Aid for International Development
USD	United States Dollar
WHO	World Health Organization

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Frank Muramuzi
Executive Director

The National Association of Professional Environmentalists (NAPE).

Executive summary

Poor implementation of laws, lack of awareness on different aspects of sound chemicals management, inadequate monitoring together with the lack of respect for workers' rights, negatively impact on the flower industry in Uganda. The poor implementation of laws and the inadequate guidance and nurturing of the young flower industry has led to increased risk of pollution and to the numerous negative social and health risks to the workers and communities in surrounding areas to flower firms.

This report therefore, is based on the findings of a study carried out by NAPE. This study mainly focussed on the areas within the districts of Wakiso, Mukono and Mpigi which have registered a large number of flower firms. The study also looked at small scale flower farms which are located within the three districts.

The overall objective of the study was to establish the impacts of the flower industry on the environment and peoples livelihoods in Uganda. Specifically, the study assessed and documented the status and impacts of flower firms on the environment, identified how flower firms handled and disposed of chemicals, the challenges they faced during production, and attempted to describe how the industry is organized in Uganda. Finally, the study attempted to find out how flower firms were addressing the challenges of workers' rights, their health as well as that of the communities around them.

In order to achieve the above objectives, NAPE commissioned a research. Data was collected from communities, flower farm owners, from employees of flower firms, from officials of UFEA, NEMA, Export Promotion Council (EPC), the Uganda Horticulture Allied Workers Union and the Ministry of Agriculture Animal Industry and Fisheries (MAAIF). Various stakeholders were involved in interviews and discussions. A number of documents on the subject matter were reviewed, which helped to compliment the data collected from the field by the research team.

The findings from the study indicate that some of the current practices in the growing flower business are harmful to the workers and to the environment. The study findings also show that institutions that are responsible for regulating the industry are inadequately facilitated and funded to enable them effectively do their work. On the other hand, the majority of flower firms do not cooperate with local leaders, the workers and the CSOs working in the area of environment and workers rights. Seemingly, flower firms are defiant regarding the implementation of laws on workers' rights, the environment and labour laws among others.

The study findings also indicate that Uganda's export earnings from flower farming registered an increase from 2003 to 2004, but started declining from 2005 to 2006 due unfavourable conditions that affected flower farmers in the country. Also important to note is that, the decline that occurred in the flower business from 2008 was due to the aftermath of the global crisis which affected the demand for commodities in many importing countries forcing people in these countries to cut expenditure on non essential commodities. That notwithstanding, the industry contributed about 14% of the total national export earnings.

Until recently, natural flowers have come under competition from artificial flowers. According to Mieko Hirano, Palo Alto Floral Design Examiner, fresh flowers are better than silk flowers in various senses such as the quality, appearance and fragrance. She however notes that some people do like silk flowers better than fresh flowers due to a number of reasons. This emerging liking for artificial flowers was; in one way, a threat to the market for natural flowers today and is likely to be in the future. Potentially, such a threat affects the economy of Uganda since flowers today contribute to our economy.

The flower industry is known in the country for being an important employer. The salaries/wages paid to the workers differ from farm to farm. However, overall most of the workers on flower farms are paid poorly in relation to the risks that they get exposed to. All flower firm workers who participated in this study said the money were being paid was too little in comparison with the work they do and the risks they were exposed to. Unlike big firms, the study found that small flower farms were paying slightly higher pay to their workers although they were only able to employ a few people; between one and three persons only.

The study found out that many flower firms were not providing adequate protective gear to their workers thereby, exposing them to chemicals risks. It was also found out that workers who developed complications due to chemicals exposure were laid-off with limited or no medical support. It was also noted that there was no compensation for health damage.

It was found that management of flower farms were not encouraging their workers let alone allowing them to join trade unions. Most flower firms did not; therefore encourage their workers to join the Uganda Horticulture and Allied Workers Union that advocated for the rights of flower farm workers. This was attributed to strikes that were experienced in the past when workers joined the trade unions.

The study found that indeed large flower farms in Uganda were chemical intensive. Their ecological impacts; according to surrounding communities, among others include reduced bee population which was negatively impacting on fruit yields in the area and contamination of water sources. These risks arise from the lack of proper chemicals wastes management systems among many of the flower firms.

On the part of small farmers, it was noted that they were using ambush to prevent pests from attacking their flowers. However, on top of using ambush they were also using locally made concoction of milk and maize flour to control pests while at the same time, chicken droppings and cow dung were being used to improve soil fertility; by doing this, they able to reduce on the amount of chemicals that they were using.

Flower firms were faced with the challenge of rampant power outages and for flower firms that were located long distances away from the airport, transport was a big issue. Power outages were increasing costs of running business since most flower firms were switching to generators and fossil fuels which were making it very costly. Small scale farmers faced the challenge of not being able to access international markets because of the small flowers quantities they were producing.

While it was the responsibility of government and its line ministries to oblige and ensure that flower firms adhere to national policies, laws and regulations; on the environment, human health and workers' rights, it was becoming apparently clear that this was not the case. The study found government institutions lacked funds and the required logistical support its staff to effectively carry out the required monitoring and enforcement of compliance among flower farmers.

As a way of conclusion, therefore, the study noted that the flower industry is a chemical intensive and there were no initiatives in place to look for alternatives as is recommended under the Strategic Approach to International Chemicals Management (SAICM). An integrated pest management approach in the flower industry would offer such opportunity as minimising on excessive use of chemicals by adopting an integrated pest management approach. Flower farms could use non toxic methods of pest control in addition to the use of indigenous knowledge of pests and disease control. The soils in Uganda and its climate can favour the growth of a variety of flowers without heavy application of toxic pesticides and inorganic fertilizers. The flower industry needs to critically look into aspects of sustainable use of the environment, workers health and socio-economic challenges. The industry has registered some benefits that include: incomes to unskilled and semi skilled labourers and the communities around the farms. Since most of the workers have to live near the farms, the land lords earn from the rent these workers pay to them.

Chapter One

1.0 Background

According to Smith (2003) floriculture is a branch of horticulture that is concerned with the propagation of ornamental plants, specifically focusing on flowering plants. Globally, the horticulture industry has been growing very fast, it is developed in Kenya and Picking up in Tanzania, Ethiopia and Uganda. Commercial floriculture farming in Uganda started around 1992 as one of the non-traditional cash crops. Gabre-Madhin and Hans de Vette (2004), say floriculture was introduced in Uganda after the decline in volume and value of traditional cash crops i.e. coffee, tea and cotton. According to USAID (2006) by mid 2004, Uganda's commercial flower industry was making significant economic contribution to the country. Uganda's floriculture exports were targeting two segments of the market: cut flowers and cuttings. Flower farming in Uganda was one of the fastest growing businesses in the country. The good climatic conditions and the abundant "cheap" labour had favoured the growth of the industry in Uganda. According to UFEA, about 178 hectares of land had been put under operation by the flower industry, of which 145.5 hectares was under roses, 30.5 devoted to chrysanthemums, and 2.1 hectares producing potted plants and foliage.

Flower growing in Uganda came at a time when the country was emphasising a shift from over relying on traditional cash crops to new and non-traditional cash crops. It is government's strategy to diversify its exports by identifying and promoting new crops on the international market for foreign exchange earnings. Therefore, the development of the flower industry in Uganda is based on the government's strategy of diversifying exports but also, on the steadily growing local market for flowers. The interest of government was to create employment opportunities for her rapidly growing population which the flower industry had positioned itself to offer.

Documented information that was provided by Uganda Flowers and Exporters Association (UFEA), indicated that there were more than 19 companies that were registered with UFEA. These companies were involved in flower growing and export activities while, out of these companies, three are wholly-owned subsidiaries of Dutch multinationals (Fiduga, Wagagai, Royal Van Zanten Ltd), Fiduga is further divided into two trading subsidiaries. All the five firms get their funds from the Netherlands while on the other hand, five of the registered firms with UFEA are joint ventures with Ugandans and various foreign interests and nine are 100% Ugandan owned. Most flower firms were located near Lake Victoria, with only a few being located in Mpigi districts and Mukono; for example, the Rose flower in Lugazi, 30 miles on Kampala – Jinja Highway. Most flower farms are located near the airport in Wakiso district, mainly because most flower firms want to be within close proximity to the airport. The furthest flower firm from the airport is located in Ntungamo along the Mbarara – Kabale Highway in the South West of Uganda.

While the flower industry looked to have positioned itself to provide the benefits of employment, foreign exchange and to meet the flower needs of the people of Uganda, it was increasingly coming under criticism for a number of shortcomings. According to a number of people that were interviewed, the industry is responsible for polluting the environment and it is known for the lack of commitment to address this challenge. Flower firms were accused for trampling on workers' rights including the right; to freely associate, to a good working environment, to good health and to a good pay. While all these were going on, government which had the mandate to protect its people was seen to be siding with flowers firms at the expense of the very communities it is supposed to safeguard. Broadly speaking, flower firms are seen not to be compliant to national policies and laws on the environment

and on people's rights.

The majority of the previous studies on the flower industry in Uganda; have specifically focused on business aspects of the industry which are in any way not refuted or contested without articulating issues of concern on the environment, labour rights, health and remuneration. This biased approach aimed at only bringing out the good and ended up into powering glory on the industry while neglecting a number of other very pertinent issues yet to be resolved by the very flower firms, as will be seen later in this report. It was alleged that the industry was thriving on exploitation of the local communities who were earning very low wages compared to the amount of work they were doing and the risk they were being exposed to. While there seemed to be new efforts and concerted efforts towards resolving the issue of remuneration, there seemed to be a lot to be done in other areas as well. The Importance of flower firms as employers as well as foreign exchange earners for the country was a fact that was not refuted in all the literature that was reviewed.

There was growing concern among environmentalist, development analysts, and other actors about the potential threats the flower industry may be causing to the environment and to people's livelihoods. While the country had the institutional framework and a number of good policies, laws and regulations, the flower industry was not being adequately regulated by the relevant institutions. Most of the existing laws are not even known to the workers, the communities and the companies that had invested into flower farming. It was also noted in the literature was reviewed that the existing legislation on the management of chemicals was fragmented among many institution; many of which institutions were poorly coordinated. The flower industry therefore needed to work towards addressing key challenges regarding pollution of the environment, workers rights and ensuring the health safety of the workers and communities.

1.1 Objectives of the study

The over role objective of the study was to establish the impacts of the flower industry on the environment and peoples livelihoods in Uganda. The specific objectives of the study included;

- To assess and document the status and impacts of flower firms on the environment existing at the time of the study,
- To identify how flower firms were handling and disposing of chemicals and chemical wastes,
- To identify challenges faced by flower firms during production,
- To ascertain how the flower industry in Uganda was organized,
- To find out how flower firms were addressing workers' rights, their health as well as that of the public.

1.2 Methodology

To be able to obtain adequate information regarding the impacts of flower firms on the environment and peoples livelihoods this study employed the qualitative approach. The approach helped the researchers to obtain information generated based on peoples experiences, perceptions and attitudes towards the flower industry. As part of their desk research, the researchers reviewed a number of documents pertinent to the flower industry from the national, regional and international perspective of flower farming.

1.2.1 The Study Area

The data used in this study was collected from a number of stake holders in Uganda; among others including worker from four large flower farms in Uganda namely; Wagagai, Fiduga, Rose Bud and Kajjansi Roses. The study was also able to collect data from a number of small scale flower farmers

that among others included; Mr. Buwule Musoke of Kawuku/Kisubi village, Mr. Tamale Fredrick of Luteete village along Gayaza Road, Makerere University Agricultural Farm Institute Kabanyolo, and from Mrs. Wadri of Kiwenda village in Gayaza, Wakiso district. The study also gathered information from local councils and opinion leaders i.e. local council chairpersons of villages and the communities where large flower farms were located. Data was collected from NEMA, UFEA, UHAWU, MAAIF and the Export Promotion Council (EPC).

1.2.2 Sampling and sample size

The sampling frame for large flower farms consisted of twenty members that are registered with UFEA and a simple random technique was employed to select the names of the four flower farms that were targeted for the study. For the small scale farmers the purposive sampling technique was employed. The study targeted community members, both males and females, who were eventually involved in focus group discussions.

1.2.3 Data Collection methods, tools and Data processing and analysis

The study collected both primary and secondary data. The data collected was mainly qualitative and it was collected through stakeholders' consultations and interviews. Primary data was mainly collected through focussed group discussions and in depth face to face interviews with different stakeholder respondents. To further enrich the study, a review of literature was carried out; this constituted the secondary data that was used in this report. All this data was carefully analysed by the research team.

1.3 Limitations

For all the large flower farms that were visited, management refused to give the research team any information regarding their work; neither did they allow their workers to freely participate in interviews. Therefore, for fear of being victimised, all workers who participated in the study preferred speaking under condition of anonymity. In addition, despite all effort that was made by the research team to access the green houses on large flower farms, such access was vehemently denied.

Chapter two

2.0. information on the impacts of the flower industry

2.1. Introduction

This section of the report presents the review of the background information on the impacts of the flower industry on the environment and people's health and livelihoods in the general context. However the review of literature in Uganda indicates that not much research had been done on Uganda's flower industry to ascertain its impacts on the environment, public health and on the rights of the workers on flower farms. The study therefore, attempted to bridge existing knowledge gaps. The chapter also looks at the various; health, socio-economic and environmental impacts of the industry which were explored in previous studies on the flower industry. Attempt is also made to explore the impacts of the industry on gender, especially women, who are the main source of employment in the industry.

Kovilon (2008) reacting to the article "*Floriculture industry profitable in Uganda*" that appeared in the Red Pepper; a Ugandan Newspaper, of September 8, 2011 said People should not get deceived by the gains in the horticulture industry, noting that the industry moved from Holland to Kenya and Uganda because of environment damage and chemical deposit that poison the water table.

In the floriculture industry, exposure of workers to pesticides is of particular concern; more especially in greenhouses, where up to 127 different chemicals are used in enclosed spaces, increasing the risk of exposure through the skin and by inhalation. For example, some flower greenhouses in Mexico's State of Morelos use 36 different pesticides, including the persistent organochlorines; DDT, aldrin and dieldrin. A study on fern and flower workers in Costa Rica found out that over 50% of respondents had at least one symptom of pesticide poisoning, such as headache, dizziness, nausea, diarrhea, skin eruptions or fainting. A similar study in Ecuador further indicated that, nearly 60% of flower workers surveyed showed poisoning symptoms, including headaches, dizziness, hand-trembling and blurred vision.

Many of the pesticides which are used can cause cancer, birth defects and other reproductive illnesses, as well as neurological diseases in humans. Reproduction issues in the floriculture industry raise considerable concern; studies of the largely female workforce in Colombia found moderate increases in miscarriages and birth defects among children conceived after either parent started working in the floriculture industry. Handal and Low (2009) in their research article "*Employment in the Ecuadorian cut-flower industry and the risk of spontaneous abortion*", state that Women working in the flower industry reported significantly fewer live births.

Thomas (2009), citing a study by the International Labour Rights Fund (ILRF) 2008, found that more than 66 per cent of Ecuadorian and Colombian flower workers were plagued by work-related health

problems, including skin rashes, respiratory and eye problems. They argued that these problems were mainly due to chronic exposure of workers to toxic pesticides and fungicides. Furthermore, the ILRF, drawing on the work of Harvard School of Public Health researcher Grandjean (2006), also found that: 'flower workers experience higher-than-average rates of premature births, congenital malformations and miscarriages'. The chemicals used on flower farms are of a particular threat to a workforce, which was largely made up of women and unsuspecting children.

Britt Bally (2006), in his article "*The Fabled Flower*" notes that the exposure of workers to chemicals used in the cut flower industry is of concern. Workers who transplant, prune, cut, or pack flowers often without protective clothing may absorb chemicals through their skin. Dusting and spraying within greenhouses, create an environment where workers can readily inhale pesticide vapours. There was a total disregard of the fact that the World Health Organization (WHO) recommends at least 24 hours between the time flowers are sprayed with pesticides and when employees re-enter the sprayed area.



Flowers being sorted for export: The social and environmental costs of flower farming largely remain unknown

It has also been suggested that toxic chemicals that are used on flower farms usually end up contaminating groundwater and the soil. These chemicals also eventually become part of the food chain; animals and birds eat sprayed plants and get contaminated. In addition, in the course of their seasonal migrations, birds spread the chemicals globally. Through evaporation, toxic pesticides and fertilizers that are used on flower farms end up in the atmosphere. They then travel to other parts of the globe and later fall back on earth as rain or snow (Global Pesticide Campaigner (Volume 12, Number 2 August2002).

Thomas (2009) in his article ***Behind the label: cut flower*** noted that in these days of dwindling water supplies it would be important to ask whether it is right to use water that could be a lifesaving resource either as a daily drink or as a means of irrigating food crops, for producing a luxury niche crop that is inedible. In support of his argument he goes ahead to say that, this is particularly important given that most cut flowers are grown in developing countries where poverty is endemic and access to clean water is problematic - especially as large corporations buy up land and its associated water rights. It would be important to highlight the impact of large monocultures on local biodiversity, which we know from studies into other monocultures to be deleterious.

The flower industry in developing countries is considered to be more important than citizens of these countries. A 2008 report by the Food & Water Watch and the Council of Canadians titled, ***'Lake Naivasha: Withering Under the Assault of International Flower Vendors***, notes that, the flower industry is so important to the Kenyan economy that in the face of instability the army and police put most of their resources into guarding flower shipments instead of local people - so that the Valentine's Day delivery could reach European buyers in time. Furthermore, it has been reported by the Ecologist that since 2007, that Kenyan roses have come at a cost of more than 100 deaths and the displacement of more than 300,000 people from their ancestral land. The report also indicates that, even the flower industry in Kenya, recognized the degradation of the environment that was resulting from the overuse of water, pollution and increasing population in the area. While there are moves to make fair-trade standards more widespread and reduce the impact of the industry environment, the sheer volume of flowers growing in that region cannot fail to have a long-term impact.

Since the introduction of the floriculture industry in the region, Lake Naivasha has shrunk to half its original size and the water levels dropped by three meters. The water biodiversity has been under threat; the lakes native hippos are threatened by the pollution in the lake while on the other hand, fish catches are dwindling putting local fishermen out of business. Britt Bally (2006) states that, "given the volume and toxicity of the pesticides used in the flower industry, it is not surprising that residents near flower growing areas may also be at risk. Many of the chemicals that are used in the industry are known contaminants of ground water. The industry relies on many other chemicals that are notorious groundwater contaminants, such as carbofuron, diuron, and pentachloronitrobenzene (PCNB). If a privately owned well is the primary source of water for a family, they may be at an increased risk of pesticide exposure from bathing, cooking, and drinking.

Britt (2006) further asserts that In Costa Rica, over 50% of people who worked at the fern/flower farms reported at least one symptom of pesticide exposure-headache, dizziness, nausea, diarrhea, skin eruptions, and fainting. Many protective standards developed for the United States are not in effect in other parts of the world. Quite often, the chemicals which are banned in the US because they present a serious hazard to human health and to the environment are still being used in other areas of the world; more especially in the flower industry. In his conclusion, Britt says "Only when workers, consumers, and nature are adequately protected can we ultimately enjoy the romance of cut flowers".

In addition, issues of gender and child labour within flower firms have been very high these issues are accompanied by low pay and the lack of job security for most employs within flower firms. According to Ssebuyira in an article titled 'Surviving the rose farm', in the **Daily Monitor** of Friday, November 4 2011, many workers on several flower farms in Uganda were losing sight or had been exposed to worse health conditions while spraying chemicals on flower farms. Such workers were usually given some little money to go back home where they were left to waste away. The workers; who got these

jobs because they were desperate, were paid a daily wage of between UShs 2,000 (Uganda Shillings two thousands only) to UShs 3,000 (Uganda Shillings three thousands only) depending on the flower farm they were working for.

As a result of poor working conditions and poor pay, workers had at different times staged strikes as a way of putting management on pressure to improve on their working conditions and salaries. Ssebuyira further reports of one Paul Ssekamate 23 years old; formerly working at Rosebud Flower Farm in Kakindu, a few meters from Kawuku Trading Centre along Entebbe Road, he had his eyes develop itches and burns. According to Ssebuyira, Ssekamate noticed that his eyes had become particularly painful and teary after he pulled a flower bed while scouting for mites. Doctors told him chemicals had fallen in his eyes, he was later dismissed.

After the situation became worse Ssekamate was only helped by the Uganda Horticulture and Allied Workers Union (UHAWU), which mounted pressure on Rosebud to foot his hospital bills. However, in the report it is noted that the possibility of Ssekamate recovering his sight remained in balance. Ssebuyira also observes that 45 year old Sam Ngoroye, who got a knee dislocation after sliding and falling in a store while working at Rosebud Flower Farm was inadequately compensated for the accident he had suffered while at work. However, because of the role UHAWU was playing, it was found out during this study from UHAWU and from former employees of Venus Flower Farm that, the work of UHAWU was constantly being undermined by flower farm managers, who blocked the workers from joining the labour union.

While there were a number of questions than answers on the impacts and general conduct of flower firms, as part of their public relations these firms have always maintained that they had done whatever was necessary to make the industry secure. According to them, some of the measures they had include providing workers with protective gear. They also claimed that they were providing medical and health services to their workers. According to The Daily Monitor of Friday, November 4 2011, Rosebud's Flower Farm administration manager, Mr. Mehta Dimpo, was reported to have said that the farm had a clinic which handled minor cases of work related injuries. Major cases of injury were being referred to Entebbe, Mulago or Kisubi hospitals. In addition, he said the company was paying hospital bills for most of the referrals. However, this was an indicator that previously, the farm had had two categories of injury; the minor and major categories.

In an article posted by Machrine Birungi on the Uganda Radio Network website of September 27th 2010 titled **"Flower Growing Company in Trouble for Workers Exploitation"**, it was reported that several workers of a flower firm in Ntungamo district threatened to sue their employer for poor working conditions and terms of service. The workers argued that the company was not respecting their rights, arguing that it was too exploitative. Although the workers were working under a 12-hour schedule they were only earning 2,000 shillings per day for the hours spent in the green houses and they were neither given annual leave nor sick leave.

In the same article, Birungi reported that if accidents occurred or workers got sick, they would often be fired without compensation. She cited the case of "Joseph Kyotungire who was shown the exit, after she missed two days without work, while attending to his sick wife" adding that he was never paid and ordered never to step at the company premises again, despite being owed by the company UShs 30,000 in unpaid wages. Kyotungire was reported to have taken the matter to the Uganda Horticultural and Allied Workers Union (UHAWU).

Machrine Birungi also cited Philemon Atanasi, formerly a security guard at the company who was reportedly dismissed for leading a group of workers to demand for increased pay. The article noted that the security guards wanted a pay rise from 1,500 shillings per day to 2,000 shillings. But instead of getting a wage rise, Atanasi was given a termination letter. It is also reported that some workers refused to talk openly to the Uganda Radio Network, for fear of losing their jobs. Steven Baraza, the Secretary General of Uganda Horticultural and Allied Workers Union, is quoted in the same article as saying that the union had tried in vain to lobby for improved workers conditions.

NEMA (2002) indicates that the production, transportation, use and disposal of chemicals in Uganda, is regulated by national and international legal instruments. Due to the cross-sectoral nature of chemicals management, the law is fragmented into several pieces of legislation such as the Constitution of Uganda 1995, principle legislation such as National Environment Statute 4/1995, Water Statute 9/1995, and Factories Act. Cap 198 and subsidiary legislation made there under. Non-regulatory instruments and mechanisms as instruments were fairly recent and therefore were yet to take hold. NEMA identified the need for massive education as being paramount. It also proposes a thrust of educational awareness programs directed at alerting the large illiterate population on the dangers posed by misuse of chemicals. Furthermore, It proposes that, the Industry be encouraged to adopt self regulatory programs and approaches to minimize the risks entailed in the use of chemicals. In the same spirit, NEMA suggests the need for government to be convinced that no-regulatory schemes can be as effective as the threat of legal sanctions in the management of chemicals.

NEMA (2000) further reports that, inter-ministerial commissions and co-ordinating mechanisms were being put in place to address chemical management; among others, for purposes of facilitating coordination and cooperation among various ministries, government bodies and NGOs. Included are mechanisms coordinated by, National Drug Authority (NDA); NEMA and the Agricultural Chemicals Board. However, all these look more successful on paper than in implementation, although they are supposed to provide framework for successful implementation of policies that are put in place for the proper management of chemicals.

Under the Employment Decree 4/1975, the employment of young persons in any sector, which is injurious to health, dangerous or unsuitable, is prohibited. The decree also makes it a requirement for medical examination before contracting an employee for any of the employment specified in the schedule in the Decree. It should be noted that most of the employment scheduled in the decree relates to hazardous and toxic chemicals, for example, Taxidermy and hide processing, textile dyeing and bleaching, pesticide work, fertilizer manufacturing, ore extraction, clothes dry-cleaning, among others. However, many employers were not ensuring that medical examination is carried out before taking on workers on their firms where such examination was being carried out; it was very inadequate and lacked the due seriousness.

2.2. Some of the institutions that support the flower industry in Uganda

There were a number of institutions that were supporting the development and growth of the horticulture industry in Uganda in general and floriculture in particular. Some of these together with their roles are summarized in Table two below.

Table one: Support / influence in Flower Industry in Uganda (By 2011)

Institutions	Role	Details
USAID	Financial support	Supports capacity building and research programmes to UFEA members
World Bank:	Financial support	Supporting research on increasing exports of high value agricultural commodities; the support mainly comes from the department of Environmentally and Socially Sustainable Development Department of the World Bank Africa Region (ESSD-Africa)
Kawanda and Makerere university Kabanyolo Research institute:	Research	Carries out research and trials on various plant species and trains students, communities and other interested groups on carrying out new innovations and technologies
UFEA:	Advocacy, Quality, inputs	Umbrella organization for large scale flower farmers and exporters, it provides business development services to members and influences government policies
Uganda Horticulture & allied workers union :	Advocacy, pressure group	Advocates for the safety and rights of workers in the horticulture industry
Local government:	Licences and monitoring	Give flower farmers licenses to operate in their areas and also get taxes and monitors their activities if they are complying with NEMA
Chemical Companies	Chemicals supply	These sell chemicals and fertilizers that are used in the flower firms
MAIAF:	Regulating and monitoring	Regulates importation and use of chemicals that are used in agriculture through the department of crop protection and inspection
Local communities:	Host the farms	Host the flower farms and provide labour to the flower farmers
Civil Society Organisations :	Advocacy / suggests alternatives	suggest alternative views to sustainable development of the industry
URA:	Revenue collection	Collects taxes/revenue from flower farmers

Chapter three

3.0. Policy, Legal and Regulatory Frameworks for a Sustainable Flower Industry

A sustainable flower industry in Uganda is supposed to be one that adequately addresses the key challenges regarding human health, the environment, and all other socio-economic issues. Achieving such an industry requires an appropriate policy, legal and institutional framework. Whereas chemicals are indispensable in many economic activities; including in flower farming, the failure to follow best chemical management practices is very costly to the employers, workers, the environment and the communities. Therefore, an integrated chemicals management approach should be recognized as a critical factor. Whereas chapter 19 of "Agenda 21" that was adopted by Heads of State at the United Nations Conference on the Environment and Development (UNCED) in 1992 agreed on the goal of achieving sound management of chemicals by the year 2000, this has not been possible to date.

The policy, legal and institutional framework help in addressing; the sound management of chemicals, community health, workers health, the rights of the workers and the sustainable management of the environment among other things. Therefore, a sustainable flower industry in Uganda requires necessary legal and regulatory frameworks to regulate the use, manufacture, storage, trade, transportation and disposal of chemicals. It also requires safeguards to be put in place for good; human health, the environment and for the rights of the workers. The constitution of Uganda which is the foundation for all laws in the country, provides for the right to a healthy and clean environment, the sound management of the environment, the sound management of chemicals, for the safety and protection of workers health and the protection of the rights of the workers. However, the same constitution also provides for a secure and friendly investment environment. In the same spirit, Uganda is signatory to a number of regional and international conventions, agreements and instruments that promote above principles. Below are some of the policy legal and institutional frameworks necessary for guiding the flower industry into sustainability.

3.1. Policy Framework

The National Health Policy 1989

The National Health Policy of Uganda was developed in line with the Primary Health Care (PHC) of the Alma-Ata declaration of 1978. Among other things, the Policy aims at promoting equitable access to all means of achieving health, participation in decision-making, planning and implementation of activities aimed at improving health.

National Drug Policy

The National Drug Policy aims at; ensuring that essential drugs are made available; promoting rational use of drugs; improving government regulation and control on manufacture, production, importation, exportation, marketing and use of drugs; fighting against drug and substance abuse.

National Health Sector Strategic Plan II (HSSP II) for 2005/06 – 2009

The HSSP II aims at fulfilling the health sector contribution to the Poverty Eradication Action Plan (PEAP) and the Millennium Development Goals (MDGs). Under the HSSP II the role of communities and households is emphasized.

The National Environment Policy for Uganda (1994)

The policy specifically looks at the management of the environment and its overall goal is to achieve sustainable social and economic development. The policy is implemented by NEMA and has specific provisions regarding the control of pollution in Uganda. One of the policy objectives is aimed at controlling pollution of water, land and air from domestic, industrial and other emissions and discharges, and promotes environmentally sound management of wastes and hazardous materials.

3.2. Legal Framework

The Constitution of the Republic of Uganda (1995) as amended in 2006

The Constitution of the Republic of Uganda is the supreme law in the country. The constitution provides for the sound management of chemicals and the protection of important natural resources, including land, water, wetlands, minerals, fauna and flora on behalf of the people of Uganda. It also requires the state to take possible measures to prevent or minimize damage and destruction to land, air and water resources resulting from pollution or other causes.

Article 39, provides for the right of every Uganda to a clean and healthy environment while Article 34 (4), provides for the protection of children from social or economic exploitation and prohibits the employment or performance of children in work likely to be hazardous or to interfere with their education or to be harmful to their health or physical, mental, spiritual, moral or social development. Article 40(1), provides for Parliament to enact laws that provide for the right of persons to work under satisfactory, safe and healthy conditions. Further to these articles, Article 245 provides for Parliament 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 awareness on the environment.

The National Environment Act Cap 153 Laws of Uganda

The Act provides for the sustainable management of the environment and defines a chemical as any a substance in any form whether by itself or in a mixture or preparation whether manufactured or derived from nature and for the purposes of the Act to include industrial chemicals, pesticides, fertilizers and drugs. The Act prohibits the discharge of hazardous substances into any part of the environment except in accordance with the guidelines of the National Environment Management Authority. The Act among other things prohibits pollution contrary to established standards and imposes on any person generating hazardous wastes the duty of managing such wastes. The guidelines and measures called for under this Act, to manage chemicals, include *inter alia*: registration, labelling, packaging, advertising, control of importation and exportation, distribution, storage, transportation, monitoring of effects, disposal, restriction and banning of toxic and hazardous chemicals and materials. The policy also puts in place the polluter-pays-principle which requires the polluter to pay the cost of removal. The Authority is empowered to seize the production facility, motor vehicle or vessel until mitigation measures are taken

The Waste and Hazardous Wastes Regulations, 1999 make provision for the disposal of expired and surplus chemicals and materials which have then become wastes. The Act under section 57 creates duties on people discharging hazardous substances, chemicals, oils or a mixture containing oil

into any waters or other segment of the environment. It creates a criminal offence on the person discharging the material and it creates mitigation duties and measures for accidental discharge and how to handle such accidents.

Agricultural Chemicals (Control) Act 2006

The law regulates the use of chemicals in agriculture in Uganda, especially pesticides. Consequently, it is relevant to pesticide residues in food. Under the Act, no person is supposed to manufacture, package, store, display, distribute, knowingly transport, be in possession of, advertise any agricultural chemical except in accordance with the Act. The Act also prohibits the packing, labelling, or advertising any agricultural chemical in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character, value, quality, composition merit or safety.

Control of Agricultural Chemical Statute 8/1981

All agricultural chemicals are to be handled in accordance with regulations made under this Statute. All standards and requirements are to be specified in the regulations. The Statute establishes an Agricultural Chemicals Board. The Board is charged with ensuring that agricultural chemicals are properly managed through registration, labelling, issuance of licenses regulating quality and importation

Chemical industries and pharmaceutical industry are listed among the priority areas of investment under the Statute. An investor may be required to take necessary steps to ensure that the operations of his business enterprise do not cause injury to the ecology or environment. On failure to implement this provision when included as a condition of the investment license the Uganda Investment Authority may give written notice to the investor and on failure to comply with the notice, the license is revoked.

The Occupational Safety and Health Act No 9 2006

The Act addresses the handling of hazardous chemicals during manufacture, storage, transportation and sale. It is aimed at improving working conditions of workers and in particular their safety, health, and hygiene of their working environment - to ensure that they work in an environment, which is reasonably free from all hazards that can lead to their injury and poor health. Among other objectives, the policy controls the keeping and use of chemical substances which may be explosive or highly flammable or toxic, otherwise dangerous substances, or generally preventing the unlawful acquisition, possession and use of such chemical substances at work. The Act provides opportunity for the worker to participate on his own safety and health care.

- This Act spells out measures to be carried out before anyone operates a factory.
- Section 13, puts the responsibility of protection of the worker and the general environment to the employer
- Sections 95-97 provides for the requirement by the employer; to take all preventive measure to prevent or reduce contamination of the working environment

Employment Decree 4/1975

The employment of young persons in any sector, which is injurious to health, dangerous or unsuitable, is prohibited. There is a requirement for medical examination before contracting an employee for any of the employment specified in the schedule in the Decree.

Workmen's Compensation Act Cap. 197 as amended by Act 5/1969

The employer is required to defray the reasonable expenses incurred by a workman as a result of the accident, which would entitle the workman to compensation, where a workman suffers disablement or death as a result of a scheduled disease then compensation is required to be paid.

The Uganda National Bureau of Standards (UNBS) Act Cap 237

The Act sets up the Uganda National Bureau of Standards (UNBS) whose objectives are to formulate and promote the use of national standards and to develop quality control and quality assurance systems that will enhance consumer protection, public health and safety, industrial and commercial development and international trade, among others. Section 21(1) of the Act prohibits import, distribution, sell, manufacture or possession for sale or distribution any commodity for which a compulsory standard specification has been declared unless such commodity conforms to the compulsory standard or unless the commodity bears a distinctive mark.

External Trade Act, Cap 88

This Act provides for the regulation of external trade and other matters incidental thereto and connected therewith. This Act is relevant as it can be used effectively to prevent entry of dangerous and harmful chemicals from entering Uganda.

Public Health Act Cap 281

Part IX of the Act prohibits causing of a nuisance. The Act defines what constitutes a nuisance to among others include, any factory or trade premises not ventilated so as to destroy or render harmless and inoffensive any gases, vapours, dust or other impurities, or so over-crowded as to be injurious or dangerous to the health of those employed therein. The Act prohibits the deposition into sewers or drains chemical refuse, petroleum, spirit, and carbide of calcium. The Act also lays emphasis on the prevention and suppression of infectious diseases and epidemic or endemic diseases. It also sets up drainage and Sanitation Rules, which specifically mention technical aspects of waste disposal. The Act prohibits throwing or emptying any matter likely to injure public sewers or drain or interfere with the free flow of the contents of sewers into a public sewer. Local authorities have a duty to take all lawful, necessary and reasonably practicable measures to prevent pollution of water supplies and food.

The Investment Code Act Cap 92

This Act relates to local and foreign investments in Uganda. The Act establishes the Uganda Investment Authority with the mandate of promoting, facilitating and supervising of investments in Uganda. Chemical industries and pharmaceutical industries are listed among the priority areas of investment under the Act. The Act provides for carrying out environmental impact assessment (EIA) for investment projects. It also provides for an investor where necessary being required to take necessary steps to ensure that the operations of his/her business enterprise do not cause injury to the ecology or environment.

National Medical Stores Act Cap 207

This Act establishes the National Medical Stores (NMS), to ensure the security, safety and efficient storage, administration, distribution and supply of medicines and medical supplies among other functions.

The National Agricultural Research Act 2005

The Act provides for the development of agricultural research systems for Uganda for the purpose of improving agricultural research services delivery, financing and management. The Act establishes

the National Agricultural Research Organization (NARO) whose main function is to coordinate and oversee all aspects of agricultural research in Uganda.

The Water Act Cap 152

The Act, establishes the Water Policy Committee that among other things, co-ordinates the preparation, implementation and amendment of the Water Action Plan and recommend the same to the Minister to advise the Minister at his/her request, on issues of policy relevant to investigations, use, control, protection, management or administration of water sources. The Water act provides for the ministerial powers to prescribe water which may not be discharged, trades which may not discharge waste or classes of premises or particular premises from which waste may not be discharged except in accordance with a waste discharge permit. Under the Act, pollution of water is prohibited unless authorized; a Pollution license is required for any person to do so. The Minister is empowered to make regulations.

The **polluter-pays-principle** may be applied by requiring the polluter to pay the cost of removal by any Government agency or organization or third party, and to mitigate the impact of the discharge according to provisions of S.57 (4). The Authority is empowered to seize the production facility, motor vehicle or vessel until mitigation measures are taken.

Section 52 makes it a mandatory requirement for the Authority in consultation with the lead agency to identify materials and processes that are dangerous to human health and the environment. In identification, the Authority will:

- (i) Establish and maintain a list of all chemicals produced and distributed domestically which information can be obtained from producers, importers, government bodies, research institutes, industry associations, chemical retailers and users, and public interest groups; and,
- (ii) Identification of hazard by examining:
 - Inherent physical and chemical properties such as flammability, explosiveness and reactivity with other chemical-toxicity to human beings, including ability to cause irritation, tissue damage, cancer, genetic changes or birth defects; and,
 - Impact on the environment including toxicity to animals and plants, persistence, biodegradability, accumulation and chemical reactions.

The duty to manage and minimize wastes so as not to cause ill health to the person or damage to the environment is imposed on all persons generating wastes (S.53). Section 56 provides that:

- (1) The Authority shall, in consultation with the lead agency, establish criteria for the classification of toxic and hazardous chemicals and materials in accordance with their toxicity and the hazards they present to human health and to the environment.
- (2) The Authority shall, in consultation with the lead agency, on the basis of the criteria established under Sub-Section (1) issue guidelines and prescribe measures for the management of toxic and hazardous chemicals and materials.
- (3) The guidelines issued and the measures prescribed by the Authority under Sub-Section (2) shall include guidelines and measures on -

- (a) registration of chemicals and materials;
- (b) labelling of chemicals and materials;
- (c) packaging for chemicals and materials;
- (d) advertising of chemicals and materials;
- (e) control of imports and exports of toxic and hazardous chemicals and materials;
- (f) distribution, storage, transportation and handling of chemicals and materials;
- (g) monitoring of the effect of chemicals and their residue on human health and the environment;
- (h) disposal of expired and surplus chemicals and materials;
- (i) Restricting and banning of extremely toxic and hazardous chemicals and materials.

The Waste and Hazardous Wastes Regulations, 1999 make provision for the disposal of expired and surplus chemicals and materials which have then become wastes. The Statute (Section 57) creates duties on people discharging hazardous substances, chemicals, oils or a mixture containing oil into any waters or other segment of the environment. It creates a criminal offence on the person discharging the material and it creates mitigation duties and measures for accidental discharge and how to handle such accidents.

NEMA is required to prescribe measures for the covering of toxic and hazardous chemicals and materials. The regulation of oils needs to be provided for in a separate instrument because of their nature in Uganda. The measures which are prescribed under section 57 of the National Environment Statute are not unique to oils. The management of toxic and hazardous chemicals and materials need a separate set of regulations. S. 82 provides for the protection of proprietary information. The table below provides a summary of some of the legislative instruments.

Table two: A summary of some legislative Instruments for chemical management in Uganda

Legal Instrument	Objective of the legislation	Chemical category	Ministry concerned
Agricultural chemicals (Control) ACT 2006	To control and regulate the manufacture, storage. Distribution, importation and exportation of agricultural chemicals and for other related matters Through labelling and licensing	Pesticides, herbicides, fungicides, insecticides, nematocides, acaricides bacteriacides, rodenticides pollucides, avicides, fertilizers and growth regulators	Ministry of Agriculture Animal Industry and Fisheries. Agricultural Chemicals Board
National Environment Act	Establish guidelines for management measures and classifications of toxic and hazardous chemicals and materials	Industrial chemicals, Pesticides, Fertilizers, Drugs and hazardous chemicals and materials	NEMA Ministry of Water Lands and Environment
Water Statute 1995	To provide for use, protection and management of resources and supplies	all	Ministry of Water Lands and Environment
Workman's Compensation ACT CAP197 as amended by act 1965	Provides for employers liability for compensation for death and incapacity resulting from accident	Industrial chemicals	Ministry of Gender Labour and Social Development Commissioner Labour.

Public Health	Aims at the preservation of public health.	All chemicals refuse, gases, vapours, petroleum, spirits and calcium carbide.	Local authorities, Advisory board of health M. O .H
The Waste and Hazardous Waste Management regulation of 2000	To regulate the management of waste and hazardous wastes including sorting, disposing, Internal movement, Transportation, packaging, labelling, etc	All wastes and hazardous wastes	NEMA, URA, District Environment Officers and Local Authorities
The Convention on prior Informed consent. A procedure	To promote shared responsibility and cooperative efforts among parties in international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm To contribute to their environmentally sound use by facilitating information exchange about their characteristics.	NEMA MAAIF	Ministry Of Water and Environment (MWE) Ministry of Justice and Constitutional Affairs

Source: National Profile to assess chemical management infrastructure in Uganda and collaborating institutions 2002.

The East African Community (EAC) Customs Management Act, 2005

This is an Act of the EAC which makes provisions for the management and administration of customs and other related matters. Section 18 and Schedule A among others prohibit the importation of hazardous wastes and their disposal provided under the Basel Convention; all soaps and cosmetic products containing mercury; agricultural chemicals such as DDT and industrial chemicals such as Methylbromide.

3.3. Institutional Framework

This section analyses some of the relevant institutions for the development of a viable and sustainable flower industry in Uganda. Section also gives a description of the mandates of different ministries, key government institutions and a description of some agencies that are directly or indirectly concerned with the management of some aspects of the flower industry in Uganda.

Ministry of Health

This Ministry is responsible for health care management and policy at the national level. It ensures the development and implementation of health policies in the country. The ministry among other things ensures that relevant institutions of government responsible for providing health services execute their mandates.

Ministry of Lands, Water and Environment

The mandate of the Ministry is to promote and ensure the rational and sustainable utilization, development and safeguard of land, water resources and the environment for the social and economic welfare and development as well as for regional and international peace. The sound management

of the environment and all forms of chemicals falls under this ministry. In addition, the Ministry promotes the utilization of weather and climatic information for sustainable development.

Ministry of Finance and Economic Development

The mandate of this ministry is to manage and control public finances in a prudent and sustainable manner; to ensure efficiency and effectiveness of all public spending, and to oversee the planning of national strategic development initiatives in order to facilitate economic growth, efficiency, stability, eradication of poverty and enhancement of overall development.

Ministry of Justice and Constitutional Affairs

The mandate of the Ministry of Justice and Constitutional Affairs is to advise government on legal issues and develop the necessary legal instruments, laws and regulations for the country.

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

The Ministry of Agriculture, Animal Industry and Fisheries mainly controls the use of pesticides, herbicides, fungicides and fertilizers in Uganda. In the management of agricultural chemicals, the ministry's central roles include putting in place relevant policies, guidelines, standards and provision of technical support. The ministry also plays a supervisory and resource mobilization role for the districts. The ministry provides for local authorities to implement activities at the local and community levels.

Ministry of Gender, Labour and Social Development:

Overall, the ministry is responsible for the welfare of employees in the country. The department of labour conducts awareness programmes on Occupational Health and Safety. The department of labour also conducts inspections of workplaces to ensure compliance to set policies, laws and regulation on Occupational Health and Safety. This is at times done in collaboration with Trade Unions where they exist.

Ministry of Tourism, Trade and Industry

The ministry is concerned with development of the industry sector. It also licences trading activities.

Ministry of Water and Environment

The mandate of the Ministry is to ensure the sustainable use of the environment and natural resources in the country. It is also responsible for promoting wise use of chemicals and ensuring that such chemicals do not harm the environment. It promotes and ensures the rational and sustainable utilization and development, and safeguard of water resources and the environment for social and economic welfare and development as well as for regional and international peace.

The Uganda National Bureau of Standards (UNBS)

The Uganda National Bureau of Standards (UNBS) is the institution that is responsible for ensuring that all consumer products on the Ugandan market meet a minimum standard. The bureau therefore promotes standardisation in commerce, industry, safety, health and social welfare. It is a requirement for certain products to meet certain standards in their manufacture, or production, composition treatment or performance and to prohibit substandard goods where necessary. UNBS enforces standards in protection of the public against harmful ingredients, dangerous components, poor quality materials and poor performance. It is also the mandate of the UNBS to endorse or adopt any international or other countries' specification with or without any modification as suitable and desirable for Uganda,

Agricultural Chemicals Board

The Board is responsible for controlling and regulating the importation and use of agricultural chemicals mainly for phyto-sanitary plant/crop protection purposes. It regulates the following categories of chemicals: Herbicides; Pesticides (e.g. Rodenticides, Insecticides, Fumigants); Fungicides; Fertilizers; Insecticides; Plant Growth regulators; Seed Treatment chemicals; Bio-pesticides; Chemicals for wood industry (petroleum and wood treatment); and Vector control. The Board also handles chemicals for the control of epidemic pests and diseases. The Board also gives permits to suitable and approved importers of agro-chemicals. This ensures that only recommended products are brought into the country. The Board maintains a statistical database of these chemicals the registered chemicals.

National Agricultural Research Organisation (NARO)

NARO is responsible for all agricultural research in the country. The research mandate of the various institutes established is expressly spelt out and research on chemical management in Uganda can only be implied from the general provisions of the respective Act.

Namulonge Agricultural and Animal Production Research Institute (NAARI)

Namulonge Agricultural and Animal Production Research Institute (NAARI) is mandated to undertake research in annual industrial and food crops; crop/livestock management systems and pasture.

Fisheries Research Institute (FIRRI)

The Fisheries Research Institute Jinja (FIRI) is mandated to undertake research in freshwater fisheries, fish technology, aquaculture and fish production systems.

The National Environment Management Authority (NEMA)

This is a body that is concerned with the management of all issues related to environmental conservation. It is responsible for coordination of environmental management with other relevant ministries and agencies. NEMA is also responsible for environmental policy planning and implementation, initiation/development of standards, guidelines, and legislation. In addition, NEMA is responsible for environment impact assessment; public environment sensitization and research; mobilisation, expedition and monitoring of resources for environmental management. NEMA works with all stakeholders since environment issues are multi-sectoral.

National Agricultural Advisory Services (NAADS)

It addresses mainly agrochemical awareness to the farmers. However it is a new creation under the Government's Plan to Modernise Agriculture (PMA) and its activities have not yet created any impact.

3.4. Other Elements of the General Regulatory Framework

Prior Written Consent

The Basel Convention provides a strict control system based on the prior written consent procedure. It requires that hazardous wastes be exported only if the State of export does not have the technical capacity and facilities to dispose of them in environmentally sound management. The Convention prohibits transboundary movement of hazardous wastes if the State of export or import has reason to believe that the wastes cannot be managed in expected manner in its state.

The Stockholm Convention on Persistent Organic Pollutants 2001

The Convention was adopted in May 2001 and entered into force in May 2004. It specifically deals with chemical management and in particular with POPs, PCBs and dioxides. The objective of this convention is to protect human health and the environment. Parties are required to take action on an initial group of 12 specified chemicals.

The Rotterdam Convention (1998)

The Rotterdam Convention on the Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals and Pesticides in International Trade was adopted in 1998 in response to gaps within international law related to trade in hazardous chemicals and entered into force in 2004. The convention promotes shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; and

International Labour Organisation (ILO) Conventions and Recommendations on Chemical Safety

The International Labour Organization since the beginning has seen the establishment of international standards on labour and social matters. These international labour standards take the form of Conventions and Recommendations. In addition to the ILO Conventions and Recommendations dealing with occupational safety and health matters, further guidance is provided in Codes of Practice and manuals used as reference material by those in charge of formulating detailed regulations or responsible for occupational safety and health.

Convention concerning Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents

This convention seeks to protect workers against hazards arising from occupational exposure to carcinogenic substances and agents.

Convention concerning the Protection of Workers against Occupational Hazards in the Working Environment due to Air tobacco product Pollution, Noise and Vibration

This seeks to protect workers against occupational hazards in the working environment.

Convention concerning Occupational Safety and Health and the Working Environment

This convention seeks to prevent accidents and injury to health by minimizing the causes of hazards inherent in the working environment.

Convention concerning Occupational Health Services (1985)

The Convention aims at establishing and maintaining a safe and healthy working environment and the adoption of work to the capacity of workers in light of their state of physical and mental health.

Convention concerning Safety in the use of Chemicals as at Work

In 1974 the ILO adopted Convention No. 139 - Convention Concerning Prevention and Control of Occupational Hazards Caused by Carcinogenic Substances and Agents (7). The convention seeks to minimise exposure of employees to carcinogenic substances through measures such as the substitution, where possible, of less harmful substances for carcinogenic ones, and the provision of employees with relevant personal protective equipment. Ratifying nations are required to periodically determine which carcinogenic substances and agents are to be prohibited or controlled.

Convention concerning the Protection of Workers against Ionizing Radiations

It seeks to protect workers as regards their health and safety against ionizing radiations.

Convention concerning Protection against Hazards of Poisoning arising from Benzene

The Convention aims at protecting workers from hazards arising from the production, handling or use of aromatic hydrocarbon benzene.

Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

The objectives of this Convention are: to promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; and to contribute to their environmentally sound use by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

3.5. Regional Agreements

The Bamako Convention 1991

The Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement of Hazardous Wastes is an African regional Convention that was adopted by the Organization of African Unity (OAU) in 1991. The objectives of the Convention are to protect human health and the environment from dangers posed by hazardous wastes by reducing their generation to a minimum in terms of quantity and/or hazard potential.

The EAC Treaty 1999

This is a treaty that establishes the East African Community. It requires Partner States to undertake to co-operate and adopt common policies for control of trans-boundary movement of toxic and hazardous waste including nuclear materials and any other undesirable materials;

Soft Law Instruments relevant to the Regulation of Chemicals

There are several soft law instruments that have implications on the management of chemicals in industrial establishments. The major ones are as follows:

The Strategic Approach to International Chemicals Management (SAICM)

The Strategic Approach to International Chemicals Management (SAICM) was adopted by the International Conference on Chemicals Management (ICCM) in February 2006. It is a policy framework to promote chemical safety around the world. SAICM has as its overall objective the achievement of the sound management of chemicals throughout their life cycle so that, by 2020, chemicals are produced and used in ways that minimize significant adverse impacts on human health and the environment. This “2020 goal” was adopted by the World Summit on Sustainable Development in 2002 as part of the Johannesburg Plan of Implementation.

The Universal Declaration of Human Rights

Article 25(1) of the Universal Declaration of Human Rights provides that each person has the right to a standard of living that ensures the health and well-being of one ‘self and one’s family, especially for medical care as well as for the necessary social services. It adds that every person has the right to security in case of unemployment, sickness, disability or in case of loss of earnings due to circumstances beyond the person’s control. Uganda is a party to this instrument and so Ugandan consumers have a right to protection against harmful commercial products.

Agenda 21

Agenda 21 has a chapter on Environmentally Sound Management of Toxic Chemicals including prevention of illegal international traffic in toxic and dangerous products. Chapter 19 provides that substantial use of chemicals is essential to meet the social and economic goals of the world community and today's best practice demonstrates that they can be used widely in a cost-effective manner and with a high degree of safety.

Stockholm Declaration

The Declaration requires the prevention of the discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless in order to ensure that serious or irreversible damage is not inflicted upon ecosystems (Principle 6).

Code of Ethics on the International Trade in Chemicals (voluntary) 1994

The objective of the Code is to set forth principles and guidelines for private sector Parties, governing standards of conduct in the production and management of chemicals in international trade, taking into account their entire life cycle, with the purpose of reducing risks to human health and the environment which might be posed to such chemicals. The Code is general in nature and addresses industry and other private sector Parties in all countries

The Codex Alimentarius Commission and the FAO/WHO Food Standards Programme

The Codex Alimentarius (Latin, meaning Food Law or Code) is a collection of internationally adopted food standards presented in a uniform manner. It is an authority on the consumer protection subject. The Codex Alimentarius Commission is an intergovernmental body with over 170 members, within the framework of the Joint Food Standards Programme established by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), with the purpose of protecting the health of consumers and ensuring fair practices in food trade. The Codex Alimentarius Commission implements the Joint FAO/WHO Food Standards Programme, the purpose of which is to protect the health of consumers and to ensure fair practices in the food trade.

The FAO/WHO Food Standards Programme

At international level, considerable effort has been undertaken to ensure the chemical safety of food supplies. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) evaluates food additives, contaminants and veterinary drug residues, and the Joint FAO/WHO Meeting on Pesticide Residues (JMPR) evaluates pesticide residues. Recommendations are made on acceptable daily intake (ADI), on maximum residue levels (MRLs) and maximum levels (MLs). Based on these recommendations, the Codex Alimentarius Commission and governments establish food standards and safe levels for these substances in foodstuffs. Moreover, the Joint UNEP/FAO/WHO Food Contamination Monitoring Programme (GEMS/Food) provides information on the levels of contaminants in food and on time trends of contamination, enabling preventive and control measures.

Globally Harmonized System

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS), was adopted in 2002. The system establishes an internationally agreed standard for chemical classification and hazard communication. It requires that labels on hazardous chemicals include standardized pictograms; signal words; hazard statements; precautionary statements; a product identifier; and supplier information. It further requires that chemicals be labelled the same way in every country and in every language.

Chapter Four

4.0. Study findings

4.1 How the flower industry is organized in Uganda

All flower growers and exporters in Uganda operate under an umbrella organization; the Uganda Flower Exporters Association (UFEA), which is a non-profit organization that was established in 1993 and it brings together growers and exporters of flowers in Uganda. UFEA provides business development services to its members and it is through the Association that efforts to influence government policies that affect the industry are lobbied and advocated for.

Membership is open to companies whose main activity is growing and exporting flowers. According to UFEA Current membership is made up of 19 flower farms. The association was targeting to recruit at least two new members every year. The members of the association are mainly located in Mpigi, Mukono, and Ntungamo and Wakiso districts, where it has been estimated that the total production area is about 220 hectares.

The Uganda Flower Exporters Association (UFEA) is mandated to collect and disseminate market information to members through – a monthly bulletin, a website and other available sources of information. The association also organizes and coordinate capacity building programs for flower firm owners/managers and employees, it conducts research on flower varieties and species, carries out on farm trials, contributes to the fight against flower pests and diseases, it carries out market survey/trends, contributes to policy and regulatory instruments. The supreme organ of UFEA is the Board of Directors while the secretariat of the association is responsible for the day today running of the organization.

The Uganda Flower Exporters Association (UFEA) collaborates and networks with other partners and bodies in the country which among others include:

- The input task force which is housed in UFEA and is responsible for updating the list of chemicals and submissions of the new chemicals required by its members for importation so that the formal request is submitted to the agricultural technical committee who eventually gives advice to the Agricultural Chemicals Board on whether to approve or disapprove
- UFEA, works hand in hand with the Crop Protection Department in the, Ministry of Agriculture Animal Industry and Fisheries (MAAIF) in the processing the request and approval of the importation of any chemicals which the farmers may require. Both UFEA and MAAIF are supposed to carry out routine monitoring of the member flower farms to ensure compliance.
- National Technical Barriers to Trade (TBT)/Sanitary and Phytosanitary (SPS) Committee of Uganda National Bureau of Standards
- National Technical Working Group on Global GAP
- Competitiveness Investment Climate Strategy (CICS) Steering Committee

The Uganda Flower Exporters Association as an umbrella body is also a member of other organizations namely Federation of Uganda Employers, Private Sector Foundation Uganda (PSFU) and the Uganda Manufacturers Association (UMA).

It is important to note however that before any flower farm is established, those intending to do so are mandated to carry out an environment impact assessment (EIA) that is submitted to NEMA and thereafter obtain a certificate of approval to go ahead if found to be compliant.

4.2 Socio-economic and Bio- Ecological impacts of flower industry

The findings under this theme: Socio-economic and ecological impacts of flower industry in Uganda were guided by the indicators -volumes and the values of flower exports, number of employees disaggregated by sex, wages/salaries, safety and health and evidence of environment pollution and degradation.

4.2.1 Export earnings

According to information obtained from staff at UFEA Approximately 20% of Uganda flower exports go to the auction and 80% to direct sales. Direct sales are sent to Roto, Carms, Fides Holland, and Sierex.or Zurel within Netherlands or to importers in other countries. All the Ugandan flowers go to Netherlands and then are distributed to countries like USA, Norway, Sweden United Kingdom, Japan and Germany. The study team obtained data on the volume and the value of Uganda's flower exports and it is summarized in Table One

Table three: Volume and Value of Flowers Export From 2003 to 2010

Year	Volume of export (Tones)	Value in USA in million dollars
2003	5636	22.08
2004	6092	28.42
2005	7520	34.86
2006	6870	27.00
2007	6559	32.05
2008	6799	34.20
2009	6467	32.00
2010	5360	28.00

Source: Annual Report, Uganda Bureau of Statistics

From 2003 and 2004 Uganda registered an increase in export earning but the export earnings dropped in 2006 to 27 million USD from 34.48 million according to official from UFEA this was due to unfavourable conditions that ravaged the flower farmers thus lowering export volumes from 7520 tons to 6870 tons respectively. The decline in 2008 from 6799 to 5360 was due to aftermath of global crisis which affected the demand for commodities in many importing countries that forced people to cut expenditure on non essential commodities

Information obtained from local flower farmers and vendors indicated that there is a potential market for locally grown flowers. According to small farmers who participated in this study, they said the market started in the 1980's when people came back from exile where they picked the interest

in flowers and it has spread to many Ugandans especially the elites, who use them during various ceremonies such as wedding ,burials, birth days and valentine days .The market is good and according to them they earn above two million Uganda shillings (100USD) per month and the farmers further told the research team that they have gained a lot from this kind of farming all of them said they have not had problems of educating their children even in most expensive schools in the country and one of them had a big house which he said he spent over UGX 70,000,000

On the other hand, development has been rapidly taking place in the manufacture and marketing of low cost artificial flowers. Recent years, have seen the marketing cheap artificial flowers grow on many European markets. This growth has meant that natural flowers are slowly but steadily coming under completion from these artificial flowers. Mieko Hirano a Palo Alto Floral Design Examiner acknowledges the fact that fresh flowers are better than silk flowers in various senses such as the quality, looking, appearance and fragrance but goes ahead to note that some people today do like silk flowers better than fresh flowers due to a number of reasons. This emerging and growing; not only liking, but also use of artificial flowers is in one way a potential threat to the market for the natural flowers today and in the future. Potentially, such a threat should be looked at as one of the major challenges to the flower industry in Uganda and therefore to the economy of Uganda.



Capturing the Market: Artificial Flowers at Schiphol Airport

4.2.2 Employment and wages

The flower industry in Uganda has created employment for the people around the flower farms especially the unskilled and approximately over 80% are women according to the information gathered from the four flower farms that were contacted during the study.



Unskilled Labour: Women provide the bulk of the unskilled labour in a number of flower farms in Uganda

The table iv below gives a summary of findings in relation to the gender of the different workers in some of the flower firms in Uganda.

Table four: Number of people Employed by Some of the Flower Farms in Uganda

Name of the flower farm	Number of females	Number of males	Total employees
Wagagai	1360 (80%)	340	1700
Oases	140 (70%)	60	200
Kajjansi Roses	160 (80%)	40	200
Royal Van Zanten Ltd	648 (80%)	162	810
Ugarose Flowers Limited	175 (70%)	75	250
JP Cuttings	x	X	300
Xclusive Cuttings	x	X	280
Rosebud Limited	600 (60%)	400	1000
Aurum Roses	x	X	250
Melissa Flowers	x	X	350

X: indicate that no information available by the time the study was conducted

Table four above shows the distribution of employment by gender in the flower industry; women dominate the work force in the industry (over 70% on average, of the total work force).

The salaries/wages paid to the workers differ from farm to farm and range between UGX 40,000 (\$16) and UGX 100,000 (\$ 40) per month for the unskilled workforce, UGX100,000 (\$40) and 400,000 (\$ 160) per month for the semi skilled (supervisors and clerks among others) and between UGX400,000 (\$160) and 2.5 million (\$1,000) for the skilled manpower. The study further found that unlike the big firms, small flower farmers were paying their workers between 200,000 to 250,000 UGX per month although they employ few people between one and three persons. However all the employees who participated in this study said that the money was too little in comparison with the work they do in view of their safety and the economic situation in Uganda.

One woman respondent from said ***"I do not save anything from the 80,000 Shillings that I earn, I pay house rent of 30,000 per month, and 50,000 shillings for my children school fees ,if my husband was not working I do not know how I would be surviving"***



4.2.3 Safety and occupational health

Provision of appropriate personal protective equipment (PPE) is prerequisite for any one handling chemicals. In all the firms where this study done, inadequate provision of Personal Protective Equipment to workers, ignorance and negligence of workers towards the likely effects not using protective gear was noted. Some of the workers interviewed said some of the flower firms do not provide gloves and boots for the workers. In some firms, it was noted that management forces

workers to go to prune and harvest flowers even when the spray has not settled down; this is done in disregard of the precautionary information on the chemical containers.

A respondent at FIDUGA they get exposed to sodium fumes during the boiling process because they are forced to boil for a long period than recommended, yet they are not provided with adequate protective gear. It was also alleged that because of the rate at which the workers fall sick after exposure to chemicals, the company had started employing people from as far as Mukono and even the Democratic Republic of Congo. Another respondent said employees at FIDUGA had gone on strike four times but nothing had changed. However, he blamed government for not caring about their safety and taking action against the farms that violate their rights.

There were further allegations that workers who die due to exposure to chemicals are not compensated. According to one worker, "We come here when we are healthy but when we fall sick they say we came when we were sick and we are transported back home" and that when someone complains he or she is sent a way without pay. One of the interviewees who happens to have worked on a farm for seven years confirmed to the researchers that when he joined the firm he was subjected to medical examination to prove fitness, but when he started falling sick he asked for medical support they threatened to sack him and still works though unhealthy conditions.

According to the farm managers, the safety of workers and their conditions of service had started improving. This however is attributed to the interventions from Holland the largest consumer of Uganda's flowers, which has been implementing the Milieu Programma Sierteelt (MPS) an international standard organization with a social code that covers environment, health safety and terms of employment policy which began in November 2011. In wagagai flower farm **the interviewed workers** said the farm was providing protective gears, ranging from boots, coats, gloves, head and face masks, which was also **verified** by the research team.

According to an official from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), the ministry was finding it a challenge to enforce the use of protective gears. The ministry has overtime observed that, even if the lack of such gear is an issue, the worker themselves find most of the protective gear that they use very uncomfortable due to the heat they generate when they are put on. Therefore, many workers; tend to avoid them.

While it was noted during the research that even small flower farmers spray some chemicals on some species of flowers such as Roses and Mums, several of the flower species that they grow are not sprayed with chemicals for example; small scale farmers do not spray flowers like the lilies, tuber roses and Asparagus. Unfortunately however, it was noted that all the five small scale farmers and that participated in the study had no protective gears for themselves and for their workers. It was also observed that even the small scale flower farm at Makerere University Farm at Kabanyolo did have protective gear yet it should have been exemplary.

4.2.4 Ecological impacts

Members of the community interviewed around flower firms indicated that the chemicals used by flower firms to spray on the flowers were reducing the population of bees. The communities further allege that by affecting the population of bees in the area, flower firms affecting fruit yields in the area.

The study also found out that most flower firms did not have in place appropriate waste management

system. It was noted that chemicals wastes were being poorly disposed thereby, putting water sources at risk of contamination. This was also confirmed by members of the communities who were interviewed.

Some flower farms practice waste dumping in on-farm pits which, pits are used for burying empty chemical containers. However, the practice of on-farm waste dumping puts at risk of contamination; the soils, water sources, fisheries, human health and the environment in general since, such pits are not protected. Until recently the solution that remains after spraying is poured into a tank after which; wastes both in the pit and in the tank, are supposedly emptied by UFEA upon getting filled up. According to the information generated during the interview, the wastes recycled by UFEA. However, interviews with UFEA indicated that this was not recommended and this information was further corroborated from the ministry of agriculture, who also said that such recycling of chemical wastes is not recommended. This therefore means that follow up, awareness, quality assurance, good chemical management practices and monitoring of firms has gaps that need to be bridged.

4.2.5 Pesticides and fertilizers use in the Flower industry in Uganda

Flower farms use a number of chemicals that may be categorised to include fertilisers, insecticides, herbicides, fungicides and many other chemicals not mentioned here. More particularly, rose flowers are known for being prone to attack of many insect species and mites and require extensive chemicals use. Rose flowers are among other things attacked by aphids and insect species; some of which feed on tender stems and leaf petioles. These pests need to be controlled for meaning results and this done through the use of chemicals. Chemical pesticides have for several years been the most widely used method in the control of pests.

While it is true that the flower industry is one of the most chemical intensive industries in Uganda, with a high potential of pollution to both human health and the environment, to UFEA this is not necessarily the case. UFEA claimed that not so much chemicals were being used in the industry; adding that, even for the “few” chemicals that are used; flower firms follow strict rules and procedures and cannot make mistakes of not abiding by set rules and procedures or guidelines.

From the Ministry of Agriculture Animal Industry and Fisheries perspective, the chemicals used by flower firms are in small quantities that cannot cause an “alarming threat” to the environment. The regulatory instruments embedded in the agricultural chemicals Act of 2006, which became effective on 5th April 2007 provided for the use of chemicals. Procedures had been put in place requiring all flower firms before importing any chemicals to be used on their farms, to go through their association (UFEA), a technical committee and then the Agriculture Chemicals Board.

The above notwithstanding, the study found that flower firms were not good at complying with national policies and laws. Unfortunately, even government workers responsible for inspecting activities of flower firms; both large and small, were faced with a challenge of inadequate logistics like transport and funds to facilitate them carry out routine field visits. This meant that inspection activities to assess compliance or non compliance of flower firms to environmental and social safeguards were not being carried out even when such activities were planned and budgeted for. In addition, some of the necessary equipment was found to be lacking.

On the other hand, while MAAIF downplayed the risks associated with the use of chemicals in the flower industry, it did not rule out the fact that the chemicals were indeed harmful to the environment.

Flowers farming; as already stated, use a variety of chemicals, including fertilizers, preservatives, pesticides, herbicides and fungicides among others. During the study it was noted that all the large flower farms mainly grow roses which require the use of a lot of chemicals to control diseases. Rose flowers also require extensive use of pesticides and artificial fertilizers such as phosphate.

Literature and experience from other countries indicate that chemicals used on flowers pose a great threat to human lives and to the environment. For example, as earlier noted a study on fern and flower workers in Costa Rica by the Global Pesticide Campaigner (2002) found out that over 50% of respondents had at least one symptom of pesticide poisoning, such as headache, dizziness, nausea, diarrhoea, skin eruptions or fainting. The study further indicated that, the toxic chemicals used on flower farms were poisoned ground water and the soils. Furthermore, it was observed that the chemicals eventually become part of the food chain; some of the plants directly absorb the chemicals from the soil and are eaten by man and animals. On the other hand, animals and birds eat the sprayed plants as well as insects and end up being contaminated. In the course of their seasonal migrations, these birds spread these chemicals globally. Through evaporation, toxic pesticides and fertilizers that are sprayed on flower farms end up in the atmosphere, they then travel around the globe only to fall later as rain or snow.

Some of the widely used chemicals in most flower farms are indicated in the table below. It was noted that some chemicals still being used had been banned internationally and are supposed to be phased out *because of their negative health and environmental impacts. For example Methyl bromide is categorized as one of the ozone depleting chemicals and it was recommended by the Montreal Protocol to be 100% phased out by 2005 - except for allowable exemptions such as Critical Use Exemptions (CUE) agreed to by the Montreal Protocol Parties. Another banned chemical that is still under use in some flower farms in Uganda is Endosulfan that was banned under the Stockholm Convention because it can pose unacceptable health risks to farm workers, wildlife and it is persistent in the environment.*

Table five: Some of the Chemicals used by flower farms in Uganda

Common Name	Active ingredient	Hazard phrase
Verita	Fenamidone + (An imidazole) (S)-1-anilino-4-methyl-2-methylthio-4-phenylimidazolin-5-one;	Slightly toxic. Unlikely to be hazardous to humans (WHO). Toxic to fish, shrimp and oysters. Toxic to aquatic invertebrates.
	Fosetyl-Aluminium (An Organophosphate) Aluminium tris(ethyl phosphonate)	Some laboratory animal feeding studies indicate that fosetyl-Al has a slight degenerative effect on the testes of dogs and shows evidence of cancer effects (urinary bladder tumors) in male rats, when these test animals are fed high doses of the pesticide.

Common Name	Active ingredient	Hazard phrase
Equation Pro	n-butanol 30% + (An Alkane) Bupirimate 25% + (A pyrimidine) Famoxadone 3-anilino-5-methyl-5- (4-phenoxyphenyl)-1,3- oxazolidine-2,4-dione.	Slightly hazardous. WHO classification III. Famoxadone has low acute toxicity when administered by oral, dermal, and inhalation routes; No genotoxic potential; and is unlikely to pose a carcinogenic risk to humans. It is relatively non-toxic to terrestrial wildlife, but highly toxic to freshwater fish and aquatic invertebrates. May cause sensitisation by skin. Contact and inhalation; irritating to respiratory system.
Aliette Flash WG 80	Ethyl hydrogen phosphonate Fosetyl-al (Also called Aluminum tris phosphonate). (An Organophosphate)	Slightly toxic. Unlikely to be hazardous (WHO). Does not pose a risk to birds or fish, and does not adversely affect aquatic plants. Avoid breathing dust. Avoid contact with skin, eyes and clothing.
Scala	Pyrimethanil (An anilinopyrimidine) 4,6-dimethyl-N-phenyl-2- pirimidinamine.	If swallowed, do not induce vomiting unless told to do so by a physician. Possible human carcinogen.
Amonium Phosphole	Sec-butyl ammonium phosphate.	Toxic to humans, including carcinogenicity, reproductive and developmental toxicity, neurotoxicity, and acute toxicity.
Apollo	Clofentezine. (A tetrazine) 3,6-bis(2-chlorophenyl)- 1,2,4,5-tetrazine.	Clofentezine has low acute oral toxicity in all species tested. Possible carcinogen (US-EPA). Suspected endocrine disruptor (US-EPA). Skin irritant and eye irritant.

Common Name	Active ingredient	Hazard phrase
Dyname	m-Xylylenediamine (M-XDA) (A diamino xylene) 1,3-Bis (aminomethyl) benzene.	Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact. Corrosive. Causes eye and skin burns. Harmful if inhaled. May be harmful if swallowed or absorbed through the skin. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns.
Flint	Trifloxystrobin (A Beta-methoxyacryl ester) Benzeneacetic acid, (E,E)- alpha- (methoxyimino)-2-[[[1-[3- (trifluoromethyl)phenyl] ethylidene]amino] oxy]methyl]-,methylester.	Classified (US-EPA) as a “not likely human carcinogen”. Sub-chronic and chronic toxicity studies demonstrated that the primary effects of trifloxystrobin occur in the liver and kidneys, at high doses.

Common Name	Active ingredient	Hazard phrase
Previcur Flex	Propamocarb hydrochloride. (A carbamate). propyl [3-(dimethylamino) propyl] carbamate hydrochloride.	Acute oral toxicity category III Acute dermal toxicity category III Acute inhalation toxicity category IV.
Nissorum	Hexythiazox. (A thiazolidine) (4 <i>RS</i> ,5 <i>RS</i>)-5-(4-chlorophenyl)- <i>N</i> -cyclohexyl-4-methyl-2-oxo-1,3-thiazolidine-3-carboxamide.	No harmful effects are expected if the precautions are followed. <i>Inhalation</i> : High vapour concentrations - irritating to the eyes and the respiratory tract, may cause headaches and dizziness, and may have other central nervous system effects. <i>Skin</i> : Will irritate the skin. Prolonged contact with the concentrate can cause defatting of the skin and may result in dermatitis;
Folio Gold	Metalaxyl-M Concentration (% w/w): 3.0 methyl <i>N</i> -(methoxyacetyl)- <i>N</i> -(2,6-xylyl-D-alaninate and Chlorothalonil Concentration (% w/w). (a polychlorinated aromatic) 2,4,5,6-tetrachloroisophthalonitrile.	Harmful by inhalation. Irritating to eyes, respiratory system and skin. May cause sensitisation by skin contact. Limited evidence of a carcinogenic effect. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Collis	Indoxacarb. (An oxadiazine) methyl (<i>S</i>)- <i>N</i> -[7-chloro-2,3,4a,5-tetrahydro-4a-(methoxycarbonyl) indeno[1,2- <i>e</i>][1,3,4] oxadiazin-2-ylcarbonyl]-4-(trifluoromethoxy) carbanilate.	Harmful if swallowed. Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling. Harmful if inhaled. Avoid breathing (dust, vapour or spray mist). Remove contaminated clothing and wash clothing before reuse.
Impulse	Chlorpyrifos or Dursban. (An organophosphate) <i>O,O</i> -diethyl <i>O</i> -3,5,6-trichloropyridin-2-yl phosphorothioate.	Potential for both acute toxicity at larger amounts and neurological effects in foetuses and children even at very small amounts. For acute effects, chlorpyrifos classified as being moderately toxic. Highly toxic to amphibians. Very toxic for aquaculture.
Biodewcon	The fungus (<i>Ampelomyces quisqualis</i>)	A bio-pesticide, derived from micro-organism (bacteria, fungus, viruses) and natural enemies of pests (parasitoids, predators, and pathogens).

Common Name	Active ingredient	Hazard phrase
Biophos	dipotassium phosphate; dipotassium phosphonate. (A biologically activated phosphate fertiliser system, which works with nature to efficiently deliver minerals to plants through the soil and its biomass.)	Hazardous to humans & domestic animals. Harmful if inhaled or absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling.
Biopotash	An eco-friendly liquid biological formulation containing bacteria, <i>Frateuria aurentia</i> which remains around the seed or seedlings. Parasporal crystal containing Delta-endotoxin.	Safe to mammals, man, non-target parasites and predators, insects, hydrobionts, fish, and birds, Classified as, low hazardous pesticide.
Nimrod	Bupirimate. (A pyrimidine) 5-butyl-2-ethylamino-6-methylpyrimidin-4-yl dimethylsulfamate.	Low toxicity to mammals. Eye and skin irritant. Skin - Bupirimate mild irritant, moderate skin sensitizer. Not mutagenic or teratogenic (i.e. does not cause cancer or reproductive problems). If swallowed - Nausea, dizziness, diarrhoea, central nervous system depression, nose and throat irritation. If uncoordinated vomit may enter lungs causing complications. On skin - repeated and prolonged exposure may cause allergic contact dermatitis. N-butanol can be absorbed through the skin giving symptoms similar to ingestion above. Inhalation may lead to headache, dizziness, fatigue and possible nausea. High concentrations can produce central nervous system depression, loss of coordination, impaired judgement and eventually unconsciousness.

Common Name	Active ingredient	Hazard phrase
Melton	Esfenvalerate – 3.5% (A pyrethroid). (S)-Hydroprene: (Ethyl(2E,4E,7S)- 3,7,11-trimethyl-2,4- dodecadienoate or 4-chlorophenyl)-3- methylbutyrate	<i>Acute toxicity:</i> moderate; It is a suspected <i>Endocrine disruptor</i> . Symptoms of poisoning: <ul style="list-style-type: none"> • Irritation of skin and eyes • Irritability to sound or touch, abnormal facial sensation, sensation of prickling, tingling or creeping on skin, numbness. • Headache, dizziness, nausea, vomiting, diarrhea, excessive salivation, fatigue. • In severe cases: fluid in the lungs and muscle twitching may develop. Seizures may occur and are more common with more toxic cyano-pyrethroids.

Common Name	Active ingredient	Hazard phrase
Chlorpyrifos 48%	Chlorpyrifos also called Dursban. (An organophosphate) O,O-diethyl O-3,5,6- trichloropyridin-2-yl phosphorothioate.	Potential for both acute toxicity at larger amounts and neurological effects in fetuses and children even at very small amounts. For acute effects, the US-EPA classifies chlorpyrifos as Class II: moderately toxic. Highly toxic to amphibians Very toxic for aquaculture
Ridomil	Mefenoxam. (A Xylylalanine) Methyl <i>N</i> -(methoxyacetyl)- <i>N</i> -(2,6-xylyl)- <i>D</i> -alaninate.	Causes moderate eye irritation. Harmful if inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust. Wash thoroughly with soap and water after handling. Personal Protective Equipment (PPE): Applicators and other handlers must wear: - <ul style="list-style-type: none"> • Long-sleeved shirt and long pants; • Chemical resistant gloves made of any waterproof material; • Shoes plus socks.
Silwet Gold (wetting)	Polyalkylene oxide Siloxane Polyalkylene oxide copolymer	Harmful by inhalation. Irritating to eyes. Danger of serious damage to health by prolonged exposure though inhalation. Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment. Not biodegradable. Bioaccumulation potential.

Common Name	Active ingredient	Hazard phrase
Meltatox	Dodemorph (A morpholine) 4-cyclododecyl-2,6-dimethyl-morpholine	<p>Dodemorph-acetate is of low oral toxicity to rats and low dermal toxicity to rabbits. It is of low toxicity to mammalian species.</p> <p>Dodemorph-acetate is extremely irritating to the skin, severely irritating to the eye and is a potential skin sensitizer.</p> <p>The target organ of dodemorph-acetate is the liver, with effects including increases in liver weights and various histopathological.</p> <p>There was no evidence that dodemorph-acetate was genotoxic or evidence of carcinogenicity Dodemorph-acetate is of low risk to bees, is highly toxic to fish, aquatic invertebrates and algae.</p>
Thiovit Jet	Elemental sulphur.	<p><i>Oral toxicity:</i> Tests on rats indicate this product has a low toxicity following single doses of undiluted product. (LD50= >5000 mg/kg); <i>Dermal toxicity:</i> Tests on rabbits indicate this product has a low toxicity following skin contact with undiluted product. <i>Inhalation:</i> Tests on rats indicate this product is not harmful due to inhalation of undiluted product.</p> <p>No evidence was obtained of mutagenic, carcinogenic, teratogenic neurotoxic or reproductive effects.</p>

This study found out that most of the above chemicals are used in higher volumes.

This study found out that most of the above chemicals are used in higher volumes. As shown in the table some of the chemicals used are supposed to be phased because of their negative health and environmental impacts. For example Methyl bromide is categorized as one of the ozone depleting chemicals and it was recommended by the Montreal Protocol to be 100% phased out by 2005 - except for allowable exemptions such as Critical Use Exemptions (CUE) agreed to by the Montreal Protocol Parties. Another banned chemical that is still under use in some flower firms in Uganda is Endosulfan that was banned under the Stockholm Convention because it can pose unacceptable health risks to farm workers, wildlife and it is persistent in the environment.

Small scale farmers use limited chemicals on their flower farms. Findings from the study indicated that these small scale flower farmers use pesticides and fertilizers; both artificial and natural methods of pests and diseases control as well as to improve soil fertility. The artificial methods of pests and diseases control include the use of ambush and super grow for rapid and good yields and dithane metalaxyl, Rocket 44 CE, cypermethrin and Mildew. The natural methods of pests and diseases control include the use of milk plus maize flower, tobacco mixed in water with a detergent (omo), which is left to ferment for two weeks. According to a farmer who was interviewed on the use of fertilizers, super grow was being used for rapid growth and magnesium for green colour, however others were using traditional manure that included

coffee husks, chicken drops and cow dung

4.2.6 Employment of minors /children

The constitution of Uganda prohibits the employment of children for any form of employment so does a number of international labour agreements that Uganda is party to. However, Information obtained from the workers and communities around flower firms indicated that children between 10 and 15 years were being employed by some of the flower firms. This claim could not be verified because the study team was denied access to information by most of the flower firms. However, some of the workers that were interviewed during the study indicated that they were in their senior four vacations.

According to UFEA, children working in plantations including flower firms, are exploited and are brought from distant regions to work for very little money. This was happening because children have limited or no knowledge about their rights and the dangers associated with exposure to chemicals at an early age. UFEA was working with all flower firms to ensure that employment of minors is totally eliminated.

4.3 Disposals of chemical waste by flower firms

Kajjansi Roses: According to information obtained from respondents who happened to be employees of the firm, the firm has a pit where they keep empty bottle wastes that contained chemicals and a tank where the remains of the chemicals from spraying. The team was also informed that the wastes were kept when the pit is full they inform UFEA to come and empty it. However, it was not possible for the study team to establish where UFEA takes the wastes from this site.



Waste Treatment:

The photograph shows biological purification of technical and human waste water by one of the flower firms

Rose bud: The denied the study team access to the farm but neighbouring communities talked to during the study expressed concern that the firm disposed of its wastes into papyrus swamp which was also an important water source for the communities. To verify community claims, the researchers visited the swamp with members of the community and they were shown the water from the firm which had some foam.

Fiduga: The workers talked to indicated that the firm owned a tank which was used to store liquid chemical wastes and this tank is emptied when it gets filled up. However, there was concern over where these wastes were being disposed off since they did not know where the content went after it was emptied from the tank.

Wagagai: Interviews carried out with some former workers of the company indicated that the firm

channelled its waste water to a particular place where it was first treated before being disposed into the lake.

Flowers are transported to the market by air transport, with increasing airfares, it was becoming a big problem for the large flower firms. Small Scale Farmers: This category of flower farmers was found to be using the least amount of chemicals. The study found that they did not have treatment facilities for their chemical wastes, the chemicals that they disposed and the spills went straight into the soil. However, it was also observed that the majority of the small scale farmers locally made fertilizers and pesticide spray solutions which were less toxic.

4.4 Absence of cooperation between flower farmers and Union

According to the General Secretary Horticulture and Allied Workers Union, many of the flower industries in Uganda make it difficult for their employees to join the Horticulture and Flower Workers Union. The study also found that most workers had lost confidence in the workers unions, they said, joining the union or not joining them was not helping them anyway. The workers sadly argued that, over the years, their rights have repeatedly been abused but during the entire of this period, neither the government nor the union was able to come to their rescue. As a desperate and as a sign of resignation, some of the workers indicated that they had decided to keep quiet and suffer silently. It was also found that the workers did not know what their union does apart from negotiating salary increase.

4.5 Challenges of the flower industry in Uganda

Overall the study found that, the flower industry in Uganda is faced with a number of challenges; environmental, social or economic. Some of these problems are local while others have an international or global dimension. These challenges include; Like other cash crops, the flower industry was faced with the challenge of declining markets due to the world economic crisis; consumers had continued to limit their expenditures on non essential commodities.

While chemicals posed health risks to the workers, it was found that the workers were usually not willing to use protective gear. The protective gear were found to be uncomfortable by the workers given that Uganda at times has extremely hot conditions for some of the protective gear to be used. There were challenges of employing under age persons as well as the challenge of not giving opportunity to workers in the flower industry to freely associate into unions. The rights of workers in Uganda are derived from international and domestic human rights laws. The International Labour Organization (ILO) Conventions allow collective actions and organization of labour unions.

The weather and climate conditions around the Lake Victoria basin, where most flower farms were situated, are largely humid, making them very attractive to a host of diseases. According to some of the interviewees, this climatic condition is responsible for the production of flowers with small heads which are known not to be competitive on the international market as compared to those with bigger heads. However, flower farmers are forced to be around Lake Victoria because of the proximity to the airport for easy transportation.

The flower industry in Uganda was faced with a number of challenges regarding the health of workers and that of the people living in surrounding areas to flower farms. However, all flower firms were found not to have the capacity to assess and ascertain the health of workers on recruitment and to routinely assess their health to be able to determine their health status after exposure to the

chemicals in their work environment.

The management of waste among the majority of flower firms that were studied was found to be inadequate. There was a lot of speculation about where such toxic wastes were disposed of. Appropriate infrastructure for sound management of chemical wastes in most flower firms was reported missing. There were a lot of calls for the adoption of a waste management approach that looks at the entire life cycle of the chemicals that are used in flower firms to ensure that the environment is not polluted. Some of the workers that were interviewed complained of skin irritation and burns which they attributed to the chemicals that they were using during spraying and handling flowers immediately after they were sprayed. In addition to chemical exposure, flower workers who participated in the study said long working hours and poor diet were among issues of safety for workers.

From the perspective of government workers responsible for inspecting activities of flower firms large and small, there was also a challenge of inadequate logistics like transport and funds to facilitate them carry out routine field visits. This meant that inspection of activities to assess compliance of flower firms were not being carried out even when such activities were planned and budgeted for. In the case of small scale famers the main challenge they were faced with was the lack of capital. The firms also noted that they were being denied credit by most of the banks. According to one of the interviewees, banks were not willing to fund flower farmers because the banks claim that the flower firms that got loans in the past were failing to service them while others had prematurely wound up without clearing their loans.

Lack of land for expansion especially in and around urban Kampala where there is a high demand for flowers. According Mr. Tamale Fredrick of Luteete and Mr. Buwule Musoke of Kawuku Kisubi who are engaged in small scale flower farming, if they had sufficient land they would be producing a lot of flowers since they had sufficient demand on the local market. Both farmers indicated that the market was there and that they were always promptly paid by their customers; more especially the retailers such as super markets and flower vendors in Kampala.

The unstable power supply that was being experienced in the country was affecting the machines of many flower firms. Companies were increasingly relying on the use of generators for electricity this had become a costly venture since the prices of fossil fuels were always increasing. In addition, the rampant water shortages meant that flower firms had to rely on the use water pumps which was an additional cost to the firms.

For small scale farmers, accessing the lucrative international market was a very big challenge, given that they were producing low volumes of flowers which were not economically viable for engaging in the external market. However, this challenge was mainly attributed to the lack of willingness of firm to work together to access this lucrative market.

4.6 Flower firms registered with Uganda Flowers Export Association (UFEA)

By time this study was carried out, the Uganda Flowers Export Association (UFEA) had about 20 registered flower firms. Some of the registered flower firms are shown in Table six below.

Table six: Location, Production area and Number of Employees in various flower Firms

Name of the farm	Location	Production area hectares)	Number of employees
Aurum Roses Ltd	Kawuku 16 km off Entebbe road	10 hectares	250
African Agro Industries	Namulanda Katabi, Entebbe road	6.5	X
Fridge Uganda Ltd	Nsimbi estate, 20 km along masaka road	18	400
Jambo Roses	Buswa village Sisa Wakiso	12	X
JP Cuttings Ltd	Off Garuga Road, off Entebbe Rd, Wakiso	10	300
Kajjansi Roses	Kajjansi, Entebbe road, 13 km from Kampala	10	400
Melissa Flowers Ltd	Bwerenga, Katabi, Entebbe rd Wakiso	11	350
Mairye Estates Limited	Kiwenda town, Ntinda Village, Gayaza-Ziobwe Road	19	X
Oasis Nursery Ltd	Kyungu, Mukono, 25 kms from Kampala	11	200
Pearl Flowers Ltd	Two sites at Temangalo, Gayaza, Wakiso District and Ntungamo, Ntungamo District	12.9	X
Rosebud Ltd	Two locations at Rosebud I Namulanda, Rosebud II Bunono (Abaita Abiri),	36	800
Royal Van Zanten Ltd	123 Hectares at Namaiba, off Nkokonjeru Rd Mukono district	9.5	300
Uganda Hortec Limited	Lugazi	10	X
Ugarose Flowers Ltd	Namulanda Katabi, Entebbe, 22 kms from Kampala.	12	250
Wagagai Ltd	Nkumba six km off Entebbe to Kampala Rd		2000
Xclusive Cuttings	Located 36kms from Kampala on Gayaza, Ziobwe Rd, Wakiso District.	50 (currently only 10% available land is currently under cuttings).	250

Source: UFEA publication (**X** no data available)

Chapter five

5.0. Conclusions and Recommendations

5.1. Conclusions

- Majority of workers on the flower firms that constituted the study are not adequately protected from the hazards of the chemicals and injuries
- Ugandan soils and climate can favour the growth of the variety of flowers that do not need chemicals and artificial fertilizers, hence higher potential for organic flower farming in Uganda.
- The horticulture and Allied Workers union, department of crop protection and NEMA and other regulatory bodies are inadequately funded to do the monitoring to track compliance of chemical use and management of the flower industry
- Since the flower farms do not allow access to their farms and information. It is difficult to tell whether they comply with the code of conduct as laid down by various regulatory authorities.

5.2. Recommendations

By virtue of the flower industry being chemical intensive, NAPE recommends the following measures to be observed in order to improve the industry;

- Employees in flower farms be subjected to periodic medical examinations (as provided for by national legal framework) to ensure their health status is not compromised, and should not work for more than two years to minimize risks due to chemicals exposure.
- A comprehensive environment Impact assessment of the flower industry be carried out by the government and other regulatory bodies
- A study to establish the effects of the flower industry on the reproductive health of women working in the flower farms be carried out
- Flower farms that do not comply with the required safety measures for their employees be closed until they comply and open their doors for workers union and other regulatory bodies
- Civil society organizations launch an intensive campaign that will compel flower firms to provide appropriate protective gears to their workers
- The Ministry of labour and ILO should address the issue of child labour, workers safety and health in the flower farms to enforce the labour laws
- NGOs intensify campaigns to promote alternatives to chemicals pesticides
- An independent body be instituted to work with Civil Society to monitor compliance and code of conduct / mandate of flower farms
- The Workers Unions should ensure that Periodic medical examinations is carried out to detect any illness due to chemicals exposure to enable early medical attention to affected workers
- The Horticulture and Allied workers Union should take responsibility of carrying out sensitization programmes about workers safety at place of work
- The Uganda Flower Export Association should explore the possibility of exporting indigenous organic flowers to European and USA markets to expand organic flower growing in Uganda
- The Smallholder Farmers should form an association that will act as their mouth piece

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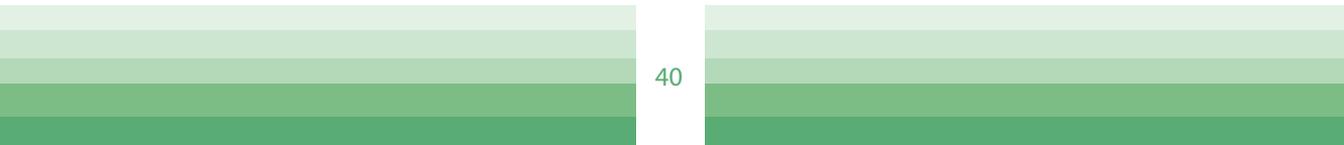
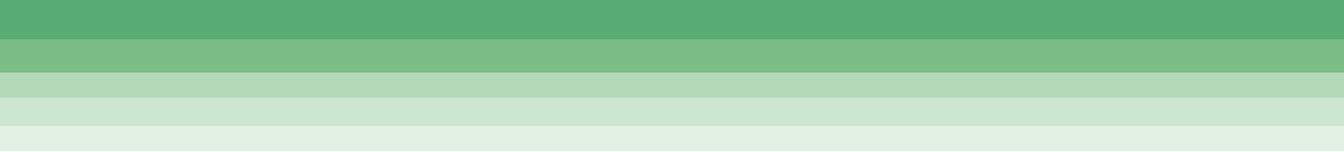
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