PESTICIDES USE AND AGRICULTURE IN UGANDA
EXECUTIVE SUMMARY

By Robert Tumwesigye Baganda
EXECUTIVE DIRECTOR
(PROBICOU)

Chemicals are useful to human life. Indeed the world could not have sustained the nutrition of its increasing population without the use of modern chemicals such as pesticides. Chemicals have also contributed significantly to improvements in human health through medicine and the control of vector-bone diseases. However, in addition to their useful properties, chemicals possess dangerous properties. They are toxic, can cause fires or explosions, can corrode or react with other chemicals in the environment, and can move on their own to places originally not intended for them. Pesticides as a special group of chemicals that are easily accessible to the rural communities. Chemicals therefore have to be used judiciously and safely.

The situational analysis efforts originating from the National Environment Management Authority informs on the nature and size of the chemical safety problem, and the structure, size, and capacity of Uganda's effort on sound management of chemicals. It noted that, a variety of chemicals are imported into Uganda every year for use in agriculture, forestry, health, industry, and veterinary services. Close to 300 pesticide formulations are known in the country. The storage, transportation, mixing, spraying and disposal of pesticides are carried out by various categories of people without correct information, skills and equipment. As a result, the population is exposed to pesticides at work, at home, and in the general environment. Of particular vulnerability are the children at work in the agricultural communities and establishments, who are involved in the use of dangerous pesticides or exposed to them as by-slanders during application.

Pro-biodiversity Conservationists in Uganda (PROBICOU) has put an effort to evaluate the hazards and exposure regarding chemicals that exist in the plantation agriculture in Uganda and targets workers and children. With the knowledge of hazards and exposure to them, the level of risk can be assessed and guidance can be given. It sought to identify dangerous chemicals and processes with a view to quantify risks and then warn key players to safeguard human health and the environment in Uganda from harmful effects of the chemicals and so, fulfil Uganda's commitment to international standards she is a party to.

This work magazine is about the management and use of pesticides in Uganda and is not limited to plantation estates and their out growers. It does not cover peasant agriculture. It does not therefore capture all chemicals used in various types of agriculture and chemicals used for public health.

IMPLEMENTATION OF SAICM IN UGANDA

By Robert Tumwesigye Baganda

The Strategic Approach to International Chemicals Management (SAICM) 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.

SAICM is distinguished by its comprehensive scope; ambitious “2020” goal for sound chemicals management; multi-stakeholder and multi-sectoral character; endorsement at the highest political levels; emphasis on chemical safety as a sustainable issue; provision for resource mobilization; and formal endorsement or recognition by the governing bodies of key intergovernmental organizations.

SAICM comprises the Dubai Declaration on International Chemicals Management, expressing high-level political commitment to SAICM, and an Overarching Policy Strategy which sets out its scope, needs, objectives, financial considerations un derlying
principles and approaches and implementation and review arrangements. The SAICM objectives are grouped under five themes: risk reduction; knowledge and information; governance; capacity-building and technical cooperation; and illegal international traffic. The Declaration and Strategy are accompanied by a Global Plan of Action that serves as a working tool and guidance document to support implementation of SAICM and other relevant international instruments and initiatives. Activities in the plan are to be implemented, as appropriate, by stakeholders, according to their applicability. With particular reference to the Global Plan of Action, pesticides are an important group of chemicals for SAICM consideration, but the current national and international laws and regulations covering the development, registration and use of pesticides should be carefully considered SAICM was adopted by the International Conference on Chemicals Management (ICCM) on 06-February-2006 in Dubai, United Arab Emirates. The Conference was organized by the United Nations Environment Program (UNEP) with active support from the World Health Organization (WHO) and other international agencies with chemicals-related programs. Public health and environmental advocacy NGOs from all regions also participated in the ICCM and in the preparatory meetings leading up to it. Representatives of international trade union federation participated, as did trade associations representing chemical and pesticide manufacturing industries and metals and mining industries.

The objective of this Strategic Approach is to change how chemicals are produced and used in order to minimize harmful effects on human health and the environment.

The SAICM is not a legally-binding treaty. It does, however, constitute a global political commitment on the part of governments and others that recognize health and environmental harms caused by chemical exposure and that pledges effective action to reform how chemicals are produced and used in order to minimize that harm.

In adopting the SAICM, governments and other participants in the ICCM agreed that improved measures are needed to prevent harmful effects of chemicals on the health of children, pregnant women, fertile populations, the elderly, the poor, workers and other vulnerable groups and They noted that some progress has been made in chemicals management, but declared that progress has not been sufficient globally, and that the environment worldwide continues to suffer from air, water and land contamination that impairs the health and welfare of millions.

Participants in the International Conference agreed that the overall objective of the SAICM is to: “achieve the sound management of chemicals throughout their life cycle so that, by 2020, chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment.” They declared their firm commitment to the Strategic Approach and its implementation and pledged to work with civil society and others in a spirit of solidarity and partnership to achieve chemical safety and thereby to assist in fighting poverty, protecting vulnerable groups, and advancing public health and human security.

The International Conference agreed that the need for action is heightened by a wide range of chemical safety concerns, including: a lack of capacity for managing chemicals in developing countries and countries with economies in transition; dependency on pesticides in agriculture; exposure of workers to harmful chemicals; and concerns about long-term health effects. It recognized that global production, trade and use of chemicals are rapidly increasing, and it agreed that this places a particular burden on developing countries and countries with economies in transition. It also agreed that the sound management of chemicals is essential to countries at all levels of development and that fundamental changes in the way that societies manage chemicals are urgently needed. NGOs and other civil society organizations in all regions have been actively campaigning in support of chemical
safety for many years. In large part, the decision by governments and others to negotiate and adopt the SAICM can be seen as a response to pressures and demands from global civil society.

It is well known, of course, that lofty statements and agreements adopted at intergovernmental meetings do not, by themselves, solve the world’s problems. Nonetheless, the SAICM is potentially very useful as a tool that civil society in all countries can utilize in their efforts to advance chemical safety objectives.

Uganda has been participating in the whole processes that led to the adoption of SAICM. By 2003, the National Management Authority (NEMA) completed an inventory of chemicals in Uganda. In 2008, NEMA completed the National Implementation Plan (NIP) on Persistent organic pollutants (POPs). Uganda has implemented some activities related to SAICM and some of which are now funded by the SAICM QSP Trust Fund. Some of the projects implemented in Uganda under the QSP framework include one national project implemented by NEMA, one regional project implemented by NAPE in collaboration with Ilima Kenya and AGENDA Tanzania and the one that is being implemented by PROBICOU. There are also some other SAICM related projects which are not funded under the QSP framework that have been implemented by some other NGOs such as those ones implemented by UNETMAC. There is an ongoing five-year GEF-UNEP/UNIDO regional project, “Capacity Strengthening and Technical Assistance for the implementation of Stockholm Convention on Persistent Organic Pollutants (POPs).” NEMA is implementing a project on LDC – UNIDO project – POPs contaminated sites. Besides, NEMA is also reviewing the National Environment Management Act (with a view to cover oil and gas issues in the Act). In addition, the Ministry of Health is reviewing the National Drug Act to incorporate current concerns about the food safety. NEMA intends to review and update of the National Implementation Plan (NIP) for Stockholm Convention on POPs following the addition of New POPs to the Convention annexes A, B and C; (funds for this work have not been secured yet). Some NGOs including Probiodiversity Conservationists in Uganda (PROBICOU), Uganda Network on Toxic Free Malaria Control (UNETMAC) and the National Association of professional Environmentalists (NAPE) have been doing research advocacy and awareness raising on chemicals management in Uganda. PROBICOU in particular has been doing awareness raising on the heavy metals, has carried out a country level assessment on the use of mercury in Uganda, and participated in the global project on Fish & Community Mercury Monitoring Project in Uganda.

PROBICOU is implementing a SAICM project entitled Promoting Chemical Safety of Children at Work in Rural Agricultural Communities. PROBICOU has plans to do work on artisanal use of mercury, and mercury use in the health care sector. PROBICOU is carrying out and awareness raising on mercury. Uganda Network on Toxic Free Malaria Control (UNETMAC)
The promotion of conventional farming in Uganda has increased compared to organic farming. This is because modern farming that is being promoted and most of exotic breeds can not do without the use of chemicals. However, there are some organizations such as the National Organic Agricultural Movement of Uganda (NOGAMU) which have been promoting organic farming in most regions of the country. Be that as it may, there are no zones in the country specifically designated for organic farming. As such, organic farmers are scattered within the country. Further more, integrated pest management (IPM), also known as Integrated Pest Control (IPC) which is a broad based approach that integrates a range of practices for economic control of pests and aims to suppress pest populations below the economic injury level is also not very well pronounced in Uganda. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms. For many years now, entomologists and ecologists have been urging the country to adopt IPM. IPM allows for a safer means of controlling pests. This can include controlling insects, plant pathogens and weeds.

The National Environment Management Authority (NEMA) promotes IPM as an intelligent selection and use of pest control actions that will ensure favourable economic, ecological and sociological consequences and is applicable to most agricultural, public health and amenity pest management situations. Reliance on knowledge, experience, observation, and integration of multiple techniques makes IPM the correct method of pest control for organic farming. For large-scale, chemical-based farms (conventional), IPM can also reduce human and environmental exposure to hazardous chemicals, and potentially lower overall costs of pesticide application material and labour.

There is a shift to a total system approach for crop protection to resolve escalating economic and environmental consequences of combating agricultural pests. Pest management strategies have long been dominated by quests for “silver bullet” products to control pest outbreaks. However, managing undesired variables in ecosystems is similar to that for other systems, including the human body and social orders. Experience in these fields substantiates the fact that, therapeutic interventions into any system are effective only for short term relief because these externalities are soon “neutralized” by counter moves within the system.

IPM extends the concept of integrated control to all classes of pests and includes tactics other than just chemical and biological controls. Artificial controls such as pesticides are applied as in integrated control, but these now have to be compatible with control tactics for all classes of pests. Other tactics, such as host-plant resistance and cultural manipulations, have become part of the IPM arsenal. IPM adds the multidisciplinary element, involving entomologists, plant pathologists, nematologists, and weed scientists. The four major problems encountered with conventional pesticides are; toxic residues, pest resistance, secondary pests, and pest resurgence.
The latter three of these are fundamental consequences of reliance on interventions that are both disruptive and of diminishing value because of counter-moves of the ecological system. Therefore, a mere switch to nontoxic pesticides, such as microbial or inundative releases of natural enemies, although helpful in reducing environmental contamination and safety problems, still does not truly address the ecologically based weakness of the conventional pest control approach. Such tools used in this manner, whether chemical, biological or physical, are extensions of the conventional approach that leaves us in a confrontation with nature. Also, this operational philosophy tends to promote the development and adoption of the more disruptive products because, within this paradigm, they work better than softer, less obtrusive materials.

Clearly, the central foundation should be based on approaches that appreciate the interactive webs in ecosystems and seek solutions with net benefits at a total ecosystem level. Therefore, there should be focus on harnessing inherent strengths within ecosystems and and this should be directed more towards bringing pest populations into acceptable bounds rather than towards eliminating them. These solutions would avoid undesirable short term and long term ripple effects and would be sustainable. Moreover, for adoption of such approaches, they must reasonably meet production demands and be cost-competitive on the short term. We suggest three lines along which approaches can be developed: (i) ecosystems management; (ii) crop attributes and multi-trophic level interactions; and (iii) therapeutics with minimal disruptions. However, with all of these approaches, it is important to keep in mind the objective of balance vs. undue selective pressure by any single tactic. IPM is not a single pest control method but, rather, a series of pest management evaluations, decisions, and controls. In practicing IPM, growers who are aware of the potential for pest infestation follow a four-tiered approach. The four steps include: (1) Action Thresholds: Before taking any pest control action, IPM first sets an action threshold, a point at which pest populations or environmental conditions indicate that pest control action must be taken. Sighting a single pest does not always mean control is needed. The level at which pests will become an economic threat is critical to guide future pest control decisions. (2) Monitoring and Identifying Pests: Not all insects, weeds, and other living organisms require control. Many organisms are innocuous, and some are even beneficial. IPM programs work to monitor for pests and identify them accurately, so that appropriate control decisions can be made in conjunction with action thresholds. Effective, less risky pest controls are chosen first, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical control, such as trapping or weeding. If further monitoring, identifications, and action thresholds indicate that less risky controls are not working, and then additional pest control methods would be employed, such as targeted spraying of pesticides. Broadcast spraying of non-specific pesticides is a last resort. (3) Prevention: As a first line of pest control, IPM programs work to manage the crop, lawn, or indoor space to prevent pests from becoming a threat. In an agricultural crop, this may mean using cultural methods, such as rotating between different crops, selecting pest-resistant varieties, and planting pest-free rootstock. These control methods can be very effective and cost-efficient and present little or no risk to people or the environment. (4) Control: Once monitoring, identification, and action thresholds indicate that pest control is required, and preventive methods are no longer effective or available, IPM programs then evaluate the proper control method both for effectiveness and risk. Effective, less risky pest controls are chosen first, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical control, such as trapping or weeding. If further monitoring, identifications, and action thresholds indicate that less risky controls are not working, and then additional pest control methods would be employed, such as targeted spraying of pesticides. Broadcast spraying of non-specific pesticides is a last resort.
Agriculture is the major economic activity in Uganda. Uganda is a fertile country and has favorable climate which makes it favorable for crops to grow almost in every part of the country. Favorable climate also favors pests and diseases to flourish and subsequently attack crops. As a result, Uganda imports substantial amount of pesticides to control pests and diseases. In order to sustainably manage the pesticides, the government of Uganda has put in place the legal framework to control pesticides.

There are some laws and policies to manage pesticides in Uganda. Article 39 of the 1995 Constitution of Republic of Uganda (As Amended in 2005) provides that, every person has a right to a clean and health environment, in particular, the State is required to take all possible measures to prevent or minimize damage and destruction to land, air, and water resources due to pollution and other causes. The Constitution imposes the duty of the State to important natural resources including land, water, minerals, oil, fauna and flora on behalf of people of Uganda.

The other important law that provides for the management of pesticides is the Agricultural Chemicals (Control) Act, No.1 of 2006. This Act is enacted to control and regulate the manufacture, storage, distribution, trade, use, importation and exportation of agricultural chemicals and other related matters. Agricultural chemicals are defined to include plant protection chemicals, fungicides, insecticides, nematicides, herbicides, miticides, bactericides, rodenticides, molluscides, avicides, fertilizers, growth regulators, wood preservatives, bio-pesticides, and bio-fertilizers or any other chemical used for promoting and protecting the health of plants, plant products and by products.

The National Environment Act, Cap 153 prohibits pollution contrary to established standards, prohibits the illegal trafficking of hazardous waste and gives any person generating hazardous wastes the duty of management of the waste.

The following institutions are charged with responsibility of managing pesticides:

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is mandated to support, promote and guide the production of crops, livestock and fish in order to ensure improved quality and increased quality of agricultural produce and products for local consumption, food security and export.

The Ministry’s functions are derived from the 1995 Constitution, the Local Government Act, 1997, the implementation of the Poverty Eradication Action Plan (PEAP) and the adoption of the Plan for Modernization of Agriculture (PMA). The Ministry performs the following function:

• Formulating and reviewing national policies, plans, legislations, standards and programmes
relating to the agricultural sector;

- Controlling the use of agricultural chemicals, enforcing zoosanitary and phytosanitary regulations including seed quality standards;

- Providing technical advice, quality assurance, technical audits and support and supervision in the areas of agricultural advisory services for crops, livestock, fisheries and entomology;

- Providing training and capacity building in the fields of agricultural extension and vector and vermin control, as may be required by the local governments.

The Ministry, through the Fisheries Resources, Crop Protection and the Animal Resources Directorates is mandated to implement and enforce the application of animal Sanitary and plant Phyto-sanitary (SPS) measures in the country. The Ministry therefore, spearheads the country’s compliance with the requirements of the World Trade Organization/SPS Agreement to ensure competitiveness of the national exports and a framework has been established for this purpose.

The stakeholders relevant to chemicals include:

Agricultural Chemicals Control Board (ACB); This is a government agency established under the S.4 of the Agricultural Chemicals Control Act, Cap 29; it is principally responsible for controlling the use of agricultural chemicals in Uganda for phyto-sanitary plant/ crop protection purposes. This body regulates the following categories of chemicals: herbicides; pesticides (e.g. Rodenticides, insecticides, fumigants, bio-pesticides), fungicides, fertilizers, plant-growth regulators, seed treatment chemicals, chemicals for wood industry (petroleum and wood treatment) and vector control. The Board also handles chemicals for safety, efficacy and suitability before being registered to ensure that only recommended products are brought into the country. Testing and analytical services are rendered by the Government Analytical Laboratory (GAL) and other Agricultural Research Laboratories in Uganda.

The functions of the board include:

- Ensuring that agricultural chemicals are duly registered and that those agricultural chemicals are used in a manner consistent with the labeling and in conformity with the regulations made under the Act.

- Regulation of the quality and importation of agricultural chemicals into the country and their distribution.

- Consideration of applications for registration of agricultural chemicals, certified commercial applicators and fumigators and issuance of licenses.

National Agricultural Research Organization (NARO)

The National Agricultural Research Organization (NARO) is established under s.2 of the National Agricultural Research Organization Act, Cap. 205. The objectives of the organization are to undertake, promote and streamline research in agriculture, livestock, fisheries and forestry. Other chemicals related research institutes which operate under this organization include; the Agricultural Engineering and Appropriate Technology Research (AEATRI), Fisheries Resources Research Institute, Jinja (FIRRI), Food Science and Technology Research Institute (FOSRI), Forestry Research Institute, Kifu (FORI), Livestock Health Research Institute, Tororo (LIRI), Kawanda Agricultural Research Institute (KARI), Namulonge Agricultural and Animal Production Research Institute (NAARI) and Serere Agricultural and Animal Production Research Institute (SAAPRI). Their research mandates are indicated in the Fourth schedule of the Act.
The Uganda Bureau of Standards’ (UNBS’) mandate is provided through the Act of Parliament (1983) that established it and is given the mandate to develop and promote standardization; quality assurance, laboratory testing, and metrology to enhance the competitiveness of local industry, to strengthen Uganda’s economy and promote quality, safety and fair trade.

The UNBS’ services to the public are both regulatory and supportive to trade in nature. They are regulatory in as far as ensuring of fairness in trade and protection of the consumers against substandard, shoddy and hazardous products is concerned, and are supportive to trade through the development and implementation of standards for the various sectors of the economy and carrying out conformity assessments of products that are competitive both locally and internationally.

As a trade support institute, UNBS support trade through the provision of the following services:

- Providing information on standards and quality requirements of the export markets.
- Conformity assessment of the export products through laboratory testing and inspection. Certificates of analysis and certificates of conformity are issued whenever required by the exports markets.
- Providing training and technical advisory services to (both existing and potential) export-oriented industries and business on standardization and quality assurance to enable them improve on the quality of the exports.
- Assisting in export-oriented industries and business in establishing Quality Management System (e.g. ISO 9000) in their processes to improve their capability of producing products that conform to the export market standard and quality requirements.

UNBS also ensure quality imports through implementation of the Import Inspection and Clearance Regulations 2002 by carrying out inspection of imports to:

- Safeguard the health and safety of the consumers and the environment against imported substandard, shoddy and hazardous products.
- Safeguard our industries from cheap counterfeit imports that can be a threat to our infant industries.
- Ensure the Uganda’s hard-earned foreign exchange is not wasted on shoddy, substandard and some times dangerous products, which may not only further impoverish the people but also cause ill health sometimes resulting in death.
Promoting chemical safety for children in Rural Agricultural Communities

In many countries, child labour is mainly an agricultural issue. Worldwide, 60 percent of all child labourers in the age group 5 - 17 years work in agriculture, including farming, fishing, aquaculture, forestry, and livestock. This amounts to over 129 million girls and boys. The majority (67.5%) of child labourers are unpaid family members. In agriculture, this percentage is higher, and is combined with very early entry into work, sometimes between 5 and 7 years of age.

Agriculture is one of the three most dangerous sectors in terms of work-related fatalities, non-fatal accidents and occupational diseases. About 59 percent (or 70 million) of all children in hazardous work aged 5–17 are in agriculture and poverty is the main cause of child labour in agriculture, together with limited access to quality education, inadequate agricultural technology and access to adult labour.

The highest number of working children aged 5-17 years work in agriculture, including farming, fishing, aquaculture, forestry, and livestock.

In Uganda, agriculture is the main contributor to the national economy contributing over 40% of the GDP, and generating 90% of earnings in foreign currency. Out of all households, 86.6% are employed in the agricultural sector. Child labour in commercial agriculture has become a major concern globally, and in Uganda in particular, especially as a by-product of policies such as economic transformation and a modernization of agriculture, which have brought the utilization of agrochemicals and machinery.

At the moment, the exact number of children engaged in work is not known although a number of recent studies continue to indicate a high number of children working in Agriculture. A study conducted by UNICEF (2000) indicates that 3.3 million children work in Uganda with most of these working in the Agricultural Sector. The Uganda Labour Force Survey 2002/03 put the total number of working children aged 5-17 years at 1.5 million, while 15 percent of these children were engaged in child labour. The Central Region had more children (467,000) than the rest of the Regions while the Western Region had the lowest number of working children (323,000). Most of the working children (91 percent) are in Agriculture and Fisheries, which usually does not require specialized skills. Elementary and services worker constitute 11 percent while other occupations are negligible. The majority of the working children work at the family dwelling (83 percent for currently attending and 70 percent for those out of school) followed by those on plantations.

Another survey, of the state of labour in Uganda, indicated that 3.5 million children are engaged in agricultural activities and largely in agriculture, while 80% of the employers in this sector have children as part of their labour force.

A study conducted on child labour in Commercial Agriculture in 2002, indicated that the average age at which a child begins work is 15 years in tea, 11 years in rice and coffee, and 9 years in tobacco enterprises. The average working time was found to be 5 hours in coffee, 9 hours in rice and coffee, and 9 hours in the tea enterprises. Of the working children, 39% employed in rice, 54% in tobacco, 48% in coffee and 40% in tea enterprises experience physical injuries while at work. Work-related ailments and complaints, including backaches, dermatitis, eye infections, pneumonia, diarrhoea, anaemia, bilharzia, abdominal pains, chest pain, athletes' foot, oedema, fever and stiff necks, were noted among 55% of the child workers in tea enterprises and 44% of the child workers in rice enterprises. 17% of working children were ex-posed to chemical hazards, especially in tobacco enterprises.


1. ILO: Accelerating action against child labour – Global Report under the follow-up to the ILO Declaration on Fundamental Principles and Rights at Work 2010 (Geneva, 2010)
2. Ibid
3. The Uganda Bureau of statistics. Uganda Labour force survey 2002/03
4. Occupational Health and Hygiene Department Report
5. ANPPCAN Uganda Chapter, Liza Solakges, e-mail to GMIS, 8 June 2000

In the tea industry, 10% of the labour force is children working in all stages such as picking, weeding and spraying herbicides. “Some agricultural activities -- mixing and applying pesticides, using certain types of machinery -- are so dangerous that children should be clearly prohibited from such dangerous work. Children in and from poor families provide more labour than their counterparts; girls generally do more agricultural work than boys; early marriage involves hazardous labour and more oppressive/exploitative work, which is detrimental to their health. Decision and policy matters generally lack sensitivity about gender, and determination to, handle exposure of children to chemicals in agriculture. Poverty is undeniably one of the greatest challenges that many countries face in their efforts to sustainably eliminate hazardous child labour, although poverty should never be an excuse for engaging children in hazardous work. According to the UNHS (2009/2010), 24.5% of the Ugandan population (7.5 million people) is poor. Of the 7.5 million, 7 million (94%) live in rural areas and are categorized as
Some of the children used in agricultural activities (PHOTO BY PROBICOU)

vulnerable and 5.8 million (78%) live in chronic poverty and (UNH S 2009/10). With such high proportions of Ugandans living in absolute poverty, many households and communities traditionally depend on children’s work and labour. Thus, children out of necessity have to work to supplement family incomes and in some cases, support themselves and their siblings.

It should be noted that, not all participation in some agricultural activities is always child labour. Age appropriate tasks that are of lower risk and do not interfere with a child’s schooling and leisure time can be a normal part of growing up in a rural environment. This is especially so in the context of family farming, small-scale fisheries and livestock husbandry. Some participation of children in non-hazardous activities can be positive as it contributes to the inter-generational transfer of technical and social skills and children’s food security. Improved self-confidence, self-esteem and work skills are attributes often detected in young people who are engaged in aspects of farm work. Therefore, it is important to distinguish between light duties that do no harm to the child and child labour, which is work that interferes with compulsory schooling and damages health and personal development, based on hours and conditions of work, child’s age, activities performed and hazards involved.

Pro-biodiversity conservationists in Uganda (PROBICOU) and partners, in collaboration with the National Steering Committee on Child Labour which is under the Ministry of Gender Labour and Social Development is implementing a 24 Months project which aims at promoting chemical safety for children at work in rural agricultural communities. This project is funded by the Strategic Approach to International Chemicals Management (SAICM) through the Quick Start Program (QSP) Trust Fund. The United Nations Development Program (UNDP) Uganda’s office is the executing agency of the project.

This project is an effort to put in place a minimal programme to prevent ill health arising from pesticides with particular focus on children at work in agricultural setting.

The Project’s focus is: - developing an up-to-date information on chemicals in agriculture, their uses, the dangerous processes and end point discharges; developing manpower among the workers, employers and the general public for the dissemination of safety measures in use of toxic chemicals; and building a comprehensive public awareness and education on the alternatives to toxic chemicals and careful use when it is necessary to use them.

The project is national in nature, although some activities concentrate in 20 selected Districts with plantation Agriculture, and districts where the ILO /IPEC Project Operates: These include and are not limited to:- Rakai, Wakisigo, Bushenyi, Kabalore, Mukono, Kanungu, Jinja, Mukono, Masindi, Rwengo, Masaka, Mubende, Mbane, Rukungiri, Kitgum, Gulu, Lira, Pallisa and Arua.

8 PROBICOU is a non for Profit Environmental Organization, engaged in environmental conservation, and poverty eradication.

9 Ministry of Labour and Social Welfare Report

Dangers associated with use of pesticides:

A person exposed to pesticides may have more than one sign of illness. Some signs show up at the time the person is exposed. Other signs do not show up until hours, days or even years later.

Many people are exposed to pesticides but may not know it. Laundry workers, garbage and recycling workers and others who have direct contact with pesticides may be in just as much danger of poisoning as farm workers. They should be aware that there are pesticides in their environment, and they should follow the same precaution as farm workers.

Signs of pesticide poisoning:
• Pin-point pupils
• Head and eyes: headaches, vision problems, small pupils in the eyes, tears
• Nose and mouth: runny nose, drooling
• Chest and lungs: pain, breathing problems, coughing
• Stomach: pain, diarrhoea, nausea and vomiting
• Legs and arms: muscle cramps or pain, twitching
• Skin: itching, rashes, bumps, redness, blisters, burning, sweating too, much.

Other Signs of pesticide poisoning are:
• Confusion
• Weakness
• Troubles in walking.

HEALTH EFFECTS OF CHEMICALS WITH RESPECT TO MANAGEMENT OF POISONING IN RURAL AREAS

By Mbaha, Ministry of Health (MoH)

Pesticides are chemicals used to kill insects, rodents, and weeds that might harm our crops and health. But pesticides also poison and kill other living things, including helpful plants and animals, and people. Pesticides are all chemicals used to control pests. They include the following:
• Insecticide used to kill insects.
• Herbicides used to kill weed and unwanted plants.
• Fungicides used to control plant moulds.
• Rodenticides used to kill rats, mice and other rodents.

Pesticides can move far from where they are used and pollute the soil, water, and air. Previously, farmers did not always use pesticides, and had great success without using them. If there is a choice, it is safer, for health and the health of the land, not to use pesticides. Pesticides are never safe. However, for farm workers, plantation workers, and anyone who feels they must use pesticides, there are ways to reduce harm and achieve safety.

PROBICOU is a non for Profit Environmental Organization, engaged in environmental conservation, and poverty eradication.
• Trouble concentration.
• Muscle twitching
• Restlessness and anxiety
• Bad dreams and trouble sleeping.

If a person has any of these problems while working with pesticides, the person should leave the worksite immediately. The person should not wait until the feeling gets worse. He or she should get away from the pesticides and go to a hospital or clinic right away to obtain medical help.

Signs of severe poisoning:
• Unconsciousness
• Loss of control over bladder and bowels
• Blue lips and fingernails
• Uncontrollable shaking

Children and Pesticide Poisoning:

Pesticides are more dangerous to children than they are to adults. Because children are smaller and are still growing, they get sick from amounts of pesticides that may not hurt adults. The amount of pesticides that will make an adult sick may kill a baby or child. Even small doses of pesticides can affect a child’s ability to learn and grow, and may cause allergies and breathing problems that last his whole life.

Common signs of pesticide poisoning in children are:
• Tiredness
• Breathing problem
• Diarrhea
• Pain in the stomach
• Skin rashes
• Coughing fits
• Seizures (“fits”) and shaking
• Unconsciousness

Signs that may show up months or years after a child is exposed to chemicals include:
• Allergies
• Breathing problems
• Difficult learning
• Slow growth
• Cancer
• Other health problems may be made worse.

Pesticides can also cause birth defects.

Protecting Children from Pesticides:

Children should be kept away from pesticides, children:
• Should not play with, use or even touch old pesticide containers.
• Should not play on farm equipment that is used to spray pesticides
• Should not wade or swim in irrigation or drainage ditches.
• Should not enter or play in a recent treated field.

Adults can protect children from pesticides;
• Wash work clothes, shoes and your hands before entering the house and before touching children.
• Wash children’s clothes apart from parent’s clothes.
• Avoid the use of pesticides at home, especially indoors.
• Store pesticides containers and equipment out of the children’s reach.

Treatment for Pesticides Poisoning:

Like other toxic chemicals, pesticides can poison people in different ways: though the skin and eyes, through the mouth (by swallowing), or through the air (by breathing). Each kind of poison needs a different kind of treatment.

When pesticides get on the skin: Most pesticide poisonings happen when pesticides are absorbed through skin when they spill while they are being moved, when they splash during mixing, or when you spray or touch crops that have been just been sprayed. Pesticides can also get on your skin through your clothes, or when you wash clothes with pesticides in them.

Rashes and irritation are the first signs of poisoning through the skin: Because skin problems may be caused by other things, such as a reaction to plants, insects’ bits, infections or allergies, it can be hard to know if the problem is caused by pesticides. Talk to other workers to find out if the crop you are working with causes this kind of reaction. If you work with pesticides and get any unexpected skin rashes, it is safest to treat the m as if they are caused by pesticides.

When the skin is burned from pesticides:
• Rinse well with cold water.
• Do not remove anything stuck to the burn.
• Do not apply lotions, fats, or butter.
• Do not break blisters.
• Do not remove loose skin.
• Cover the area with a sterile dressing if available.
• If pain lasts, get medical help! Bring the label from the pesticide containers or the names of the pesticides with you.

Pesticides can stick to your skin, hair, and clothes, even if you can not see or smell them. Always wash with soap after using pesticides.

When pesticides are swallowed:

People can swallow pesticides by eating, drinking, or smoking cigarettes in the fields while working with pesticides, or by drinking water polluted with pesticides. Children can drink or eat pesticides, especially if they are stored in containers also used to hold food, or left in the open or low to the ground.

Treatment:

If you or someone else gets pesticide on the body:
• Quickly remove any clothing the pesticides spilled onto.
• Wash the pesticides off the skin as soon as possible with soap and cool water.
• If it got into the eye, rinse the eye with clean water for 15 minutes.

If the skin is burned from pesticides:
• Rinse well with cool water.
• Do not remove anything stuck to the bourn.
• Do not apply lotions, fats, or butter.
• Do not break blisters.
• Do not remove loose skin.
• Cover the area with a sterile dressing if available.
• If pain lasts, get medical help! Bring the label from the pesticide containers or the names of the pesticides with you.

Pesticides can stick to your skin, hair, and clothes, even if you can not see or smell them. Always wash with soap after using pesticides.

When they are swallowed:

Do not vomit if the label says not to.
Never vomit after swallowing a pesticide that contains gasoline, kerosene, xylene, or other petroleum based liquids. This will make the problem worse. Never make the person vomit or drink if she is unconscious, confused or shaking badly.
If you are sure vomiting is Ok, give the person:
• A glass of very salty water or
• 2 tablespoons of pounded strong tasting edible plant (such as celery, basil, or another local herbs) followed by 1 or 2 glasses of warm water.

Keep the person moving around:
This can help vomit sooner. After vomiting, activated or powdered charcoal can help absorb any pesticide still in the stomach. Mix ½ cup of activated charcoal or 1 table spoon of finely powdered charcoal with warm water in a large glass or jar.

Make powdered charcoal from burnt wood, or even burnt bread or tortilla. This is not as good as activated charcoal, but it still works. Never use charcoal briquettes. They are poison!
Activated charcoal + water or fruit juice
Powdered charcoal + water or fruit juice

After the person vomits, or even if she does not, you can slow the spread of the poison while getting to doctor by giving her drink of:
• 1 row egg white,
• A glass of cow’s milk

Drinking milk does NOT prevent pesticide poisoning. It just slows the speed of the poison. If someone swallows pesticides and does not have sharp stomach pain, they can take sorbitol or magnesium hydroxide (milk of magnesia). These medicines cause diarrhea, which can help to get poisons out of the body.

When to get atropine. Atropine is a medicine for treating poisoning from certain pesticides called organophosphates and carbates. If the label on the pesticide container says to use atropine or if it says the pesticide is a cholinesterase inhibitor use atropine as directed. If the label does not say to use atropine, do not use it.
Atropine is used only for organophosphates’ or carbamates’ poisoning
Atropine does NOT prevent pesticide poisoning. It only delays the effects of poisoning. Atropine should never be taken before spraying.
IMPORTANT: Do NOT give these drugs for pesticide poisoning:
Sleeping pills (sedative), morphine, barbiturates, phenothiazines, aminophylline, or any drug that slows or lessens breathing. They can make the person stop breathing completely.
Every farm that uses pesticides should have an emergency kit with medicine and supplies to use in case of poisoning.

When pesticides are released into the air, we breathe them in through our nose and mouth. Once in the lungs, the pesticides quickly enter the blood and spread poison through the whole body. Because some pesticides have no smell, it is often hard to know if they are in the air. The most common forms of air – borne pesticides are fumigants, aerosols, foggers’ smoke bombs pest strips, sprays, and residues from spraying. You can also inhale pesticides dust in a storage area, when it is being used in an enclosed area, such as a greenhouse, or when it is being transported to the fields.
Pesticides dust in the air can travel miles to pollute an area far from where it was used. It is easy for pesticides dust to get into houses.

If you think you have breathed in pesticides, get away from the pesticides right away! Do not wait until you feel worse.
Treatment: If you or some one else breathes in pesticides:
• Get the person away from the area where she breathed in the poison, especially if it is an enclose area.

Chemical safety and experience of workers
By Dr. Ogaram David
Exposure to agricultural chemicals poses an increasing health risk to agricultural communities. The most affected section of the community are; the workers in plantations. Researches done by PROBICOU indicate that application of chemicals in plantations is not yet being done judiciously. Most of the workers are not well protected and still use rudimentary application of chemicals. There are some workers who have been affected by chemicals and little has been done to compensate them.

According to the Occupational Safety Health Laws, chemical management regulations and guidelines require the protection of workers while on duty and this is mandatory but because workers do not know their rights, they do not demand for protective equipments and this has put them at great risks of contracting diseases. Some workers have already been affected by the effects of chemicals and because they do not know their rights, they do not go for legal redress. The employers have a duty of care to ensure that workers are protected.
Pesticide sales and use have continued to climb over the years. In Uganda, workers, farmers and their families face correspondingly greater risks arising from the increasing use of more toxic chemicals – which chemicals may even be banned or restricted in other countries. Quite often, while at work, these people do not use suitable personal protective equipment because it is not available, or it is too costly, inappropriate, uncomfortable, or the people simply don’t have correct application techniques. Sometimes, the equipment is poorly maintained, the chemicals and equipment are kept in inadequate storage, and there is reuse of old chemical empty containers for food and water storage. The end users often do not have access to information on the risks associated with the use of chemicals and or the necessary precautions and correct dosage. They are the silent sufferers of the dangerous aspects of agricultural chemicals.

Therefore PROBICOU has been doing advocacy activities on safety and health in agriculture in Uganda focusing on the promotion of voluntary, participatory and action-oriented measures to improve working conditions in agricultural work. To this end, PROBICOU did an inventory aiming at making practical improvements in agricultural communities with a view to safeguard...
workers, their families and particularly children. Wherever and whenever pesticides are applied in agriculture, there is a need to make sure that the applicator is able to protect himself, and his community adequately against contamination.

This inventory and guidelines within it provide useful information towards this protection. They are based on a comprehensive survey here in Uganda and a review of international literature, including field and laboratory studies, undertaken by the international community. Like all such reports, it is an independent study intended to highlight the plight of these people and to provoke debate and action to improve their safety. The full report can be accessed at PROBICOU’s website or by visiting PROBICOU’s offices.

Uganda Organic Farming in Dilemma

Uganda has a strategic comparative advantage in agricultural production due to her favorable climate conditions. Uganda’s climate has for so long supported Organic Agriculture. However, the increased demand for agricultural products has culminated into the use of chemicals in a bid to increase productivity, a factor that is likely to jeopardize Uganda’s Organic Agriculture.

For example, the production of cotton, which at the early seventies commanded 55% of total foreign exchange earning but now produce only 100,000 bales of lint per year (5% of foreign exchange), is now associated with heavy use of pesticides. For instance, seed dressing prior to planting employees copper oxide to control seedling and foliage pests, such as cotton lygus and cotton helopeltis.

The growing of banana is also associated with chemical use. Green banana (plantations which constitutes the main staple diet in most parts of the country) is attacked by the banana weevil (cosmopolous similes).

To control these, dieldrin 18% and furadan 10% are used by dipping suckers prior to planting and by dusting the growing plants with 2.5% dieldrin dust or 5% furadan dust.

Coffee, which until recent has been the major foreign exchange earner, requires the use of fenitrothion against foliage pests and Round Up (glyphosate) against weeds. For long storage in silos, fumigants such as aluminum phosphate (phostxin) and Celphos (Phosphate gas) are used. Diclorvos (DDVP) is also sprayed. Zinc phosphate and Malathion dust are used against rodents.

Pesticides are also used to protect vegetables especially tomatoes and cabbages. For foliage pests, permethrin dithiocarbamate is most common against fungal damage. Organochlorines do feature here as well but as in the above cases, their use is on the decrease compared to the dominant role they played in the last 30 years.

For livestock protection against ticks, toxaphene and lindane have been standard pesticides and still widely stocked and used in farm supply shops. These are mainly used in cattle dips and currently the effluent from the dips is 500,000 m3 per annum for toxaphene alone. Although there isn’t any recent data on residues of these chemicals, early data of (1972) gave toxaphene levels of 0.25-3.75 ppm in fat tissues of cattle meat.

These values threaten human and the environment considering the toxaphene is one of the POP chemicals banned under the Stockholm Convention. As resistant of the pests to these chemicals grows, the peasants respond by using more of the chemicals to achieve the same effect. As in the above cases, this resistance has caused a growing shift to the use of organophosphates and pyrethroids in livestock care.

The use of herbicides is significant in plantation estates such for tea, sugarcane and coffee. 2-4-D is common in the control of broad leafed weeds and Grammoxone for controlling grassy weeds. Tea estates use both Grammoxone and Roundup (phosphenemethyl glycine-glyphosate) Grammoxone, Dalapon and a trazine are used in sugarcane estates.

Seed dressing prior to planting is also a major activity for kidney beans, maize, groundnuts, wheat and cotton seeds to protect them against fungicidal and insecticidal attack. Heptachlor and some times diepprin mixed with phenyl mercuric acetate are used for beans, maize and groundnuts. Wheat takes only the mercuric pesticide while cotton is dressed with cupric oxide. This again is a threat as both heptachlor and dieldrin are POPs chemicals for elimination.

At this rate, Uganda is likely to loose out the market of its products and the values associated with organic Agriculture. Apart from fetching high foreign exchange, organic agriculture is vital for restoring the environment balance and has less deleterious effects on the environment. It places the needs of local people at the centre of the farming system by strengthening locally adapted technologies which create employment opportunities and income. Organic Agriculture increases harvests through practices that favour the optimization of biological process and local resources over expensive toxic agrochemicals. Organic Agricultural practices bring land degraded by unsustainable farming practices, severe drought and soil erosion back into production.

To improve agricultural production in Uganda, organic farming needs to be promoted because it improves the export of Uganda’s agricultural exports. Uganda therefore needs a robust Organic Agricultural Sector which will increase income opportunity for the poor, stabilize the environment and increase exports earnings.

The writer is a conservation Biologist
Persistent Organic Pollutants (POPs) are carbon containing chemical compounds that to a varying degree, resist photochemical, biological and chemical degradation. POPs are often halogenated and characterized by low water solubility and high lipid solubility, leading, together with their persistence to bioaccumulation in fatty tissues.

They are also semi-volatile a property which permits these compounds either to vaporize or to be adsorbed on atmospheric particles. They therefore undergo long range transport in air and water from warmer to colder regions of the world.

Although many different chemicals both natural and anthropogenic (i.e. produced by man) may be defined as POPs, there are 12 POPs, all chlorine-containing organic compounds that have been chosen as priority pollutants by the United Nations Environment Program (UNEP), because of their impact on human health and environment. The twelve pops include many of the first generation organochlorine insecticides, e.g. DDT, aldrin, industrial chemical products, e.g. PCBs (polychlorinated biphenyls) or unwanted by-products such as dioxins and furans.

Initially the 12 POPs were identified as requiring urgent attention. These chemicals dubbed "the dirty dozen" include aldrin, chlordane, DDT, dieldrin, dioxins, endrin, furans, heptachlor, hexachlorobenzene (HCB) mirex, polychlorinated biphenyls (PCBs) and toxaphene. Dioxins and furans are by-products of industrial manufacturing processes involving chlorine and by-products of municipal medical and toxic waste incineration and manufacturing processes.

During the Fourth Conferences of Parties (COP4), a class of New 9 POPs was also listed. These new POPs were added on the list of the Stockholm Convention of POPs making it a total of 21 POPs. These new POPs include: Lindane, Alpha –HCH, Beta-HCH, Chlordecone and Industrial chemicals; Hexachlorobiphenyl, Pentachlorobenzene, Panta BDE, Octa BDE, and PFOs as well as its salts of all the pollutants released into the environment every year by human activity, persistent organic pollutants are generated unintentionally as by-product of various industrial, combustion processes.

POPs are highly toxic, causing an array of adverse effects notably death, disease and birth defects among humans and animals. Specific effects can include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorder cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorders and disruption of the immune system. Some POPs are also considered to be endocrine disrupters, which, by altering the hormonal system can damage the reproductive and immune system of exposed individuals as well as their offsprings. They can also have developmental and carcogenic effects. These highly stable compounds can last for years or decades before breaking down. They circulate globally through a process known as the "grasshopper effect". POPs released in one part of the world can, through a repeated (and often seasonal) process of evaporation and deposit, be transported through the atmosphere to regions far away from the original source. In addition, POPs concentrate in living organisms through another process called bioaccumulation. Through not soluble in water, POPs are readily absorbed in fatty tissues where concentrations can become magnified by up to 70,000 times the background level. Fish, predatory birds', mammals and human beings are high up the food chain and so absorb the greatest concentrations. When they travel, POPs travel with them. As a result of these two processes, POPs can be found in people and animal living in regions such as the Arctic, thousands of kilometers from any major POPs source.

Humans are generally exposed to POPs through the ingestion of food. A growing body of scientific evidence associates human exposure to individual POPs with cancer, neurotoxic, behavioral, reproductive effects, immunoexcitotoxic and other effects. The mechanism for many of these effects appears to be through disruption of the human endocrine system. Human beings appear to be extraordinary sensitive to these chemical during fetal development. (WFPHA, World Federation of Public Health Association, 2000). Evidence continues to link POPs to reproductive failures, deformities, malfunctions in fish and wildlife. Studies of Great Lakes predator as eagles, cormorants, trout’, minks, turtles and others, show significant health impacts including population decline and reproductive dysfunction, eggshell thinning, metabolic changes, abnormally functioning thyroid and other hormone system dysfunction, immune suppression, feminization of males and masculinisation. (WFPHA, 2000).

Like most developing countries, Uganda does not manufacture or formulate POPs chemicals or Pesticides. Despite this fact, chemicals including POPs have been used through the country for past few decades. Some of them get expired and create a disposal problem. Some times, they are buried near residential areas or sources of water, and hence, polluting ground water. Although Uganda has accumulated some obsolete pesticides over the years, information about the quality of obsolete pesticides stored in the county is very scanty. Storage facilitates for absolute pesticides however do exist at the ministry of agricultural in Entebbe, Kawanaga Agricultural Research Institute, and some other decentralized agricultural centres. Of the twelve initial POPs, DDT, PCBs and the unintentional byproducts dioxins and furans are of direct and immediate concern to Uganda. Chemicals like dieldrin and aldrin continues to be used despite a ban from the Ministry of Agriculture. Uganda as a party to the Stockholm Convention on POPs is required to monitor the release of dioxins and furans from the various release sources. However, there is currently no statistical data and furan releases although there are many sources. These sources include open burning and semi-closed burning (incineration) of municipal and medical waste in the major hospitals in Uganda. Open burning of mixed waste is also a common practice in many parts of Uganda and this is one of the major sources of dioxin releases as by-product of POPs.

In Uganda, Polychlorinated biphenyls (PCBs) are utilized as coolants in oil used in electrical appliance such as electric transformers and dielectric capacitors. The oil contains PCBs of great concern and has been in use for many years. The environment is contaminated when these appliances leak. PCBs are also included in the formation of a wide range of products including lubricants, cutting oil (used on wide scale by local artisan in Katwe, kisenyi etc). Sealing compounds for the construction industry, plastics and rubbers, insecticides, paints/ vanishes.

Presently, although all the new electric transformers purchased by the Uganda Electricity Distribution Company Limited (UEDCL) contain PCB- free oils, there are hundreds of transformers currently in use that still hold PCBs. PCB oil has been misused by small scale industries (jua kali) especially in welding and in salons for hair health treat. The government of Uganda also has re-introduced the use of DDT for Malaria control. DDT is banned for agricultural purposes the resumption of DDT use in malaria control programs is raising public concerns over possible management particularly in rural areas.

In a bid to manage POPs, the Government of Uganda has developed a national implementation plan (NIP) for POPs management. This was done by the National Environment Authority (NEMA) with technical assistance from United Nations Environment Program (UNEP) and funding from the Global Environment Facility (GEF). The National Implementation Plan for Uganda was completed in March 2009.
AGRICULTURE AND CHEMICALS IN UGANDA

PHOTO REFERENCE

MIXING CHEMICALS WHILE PROTECTED

MIXING CHEMICALS WHILE UNPROTECTED

SPRAYING CHEMICALS WHILE PROTECTED

CHEMICAL PACKAGES WITH FADED INSTRUCTIONS

A MAN WHOSE HANDS WERE BURNT BY CHEMICALS

CHEMICALS UNDER POOR STORAGE