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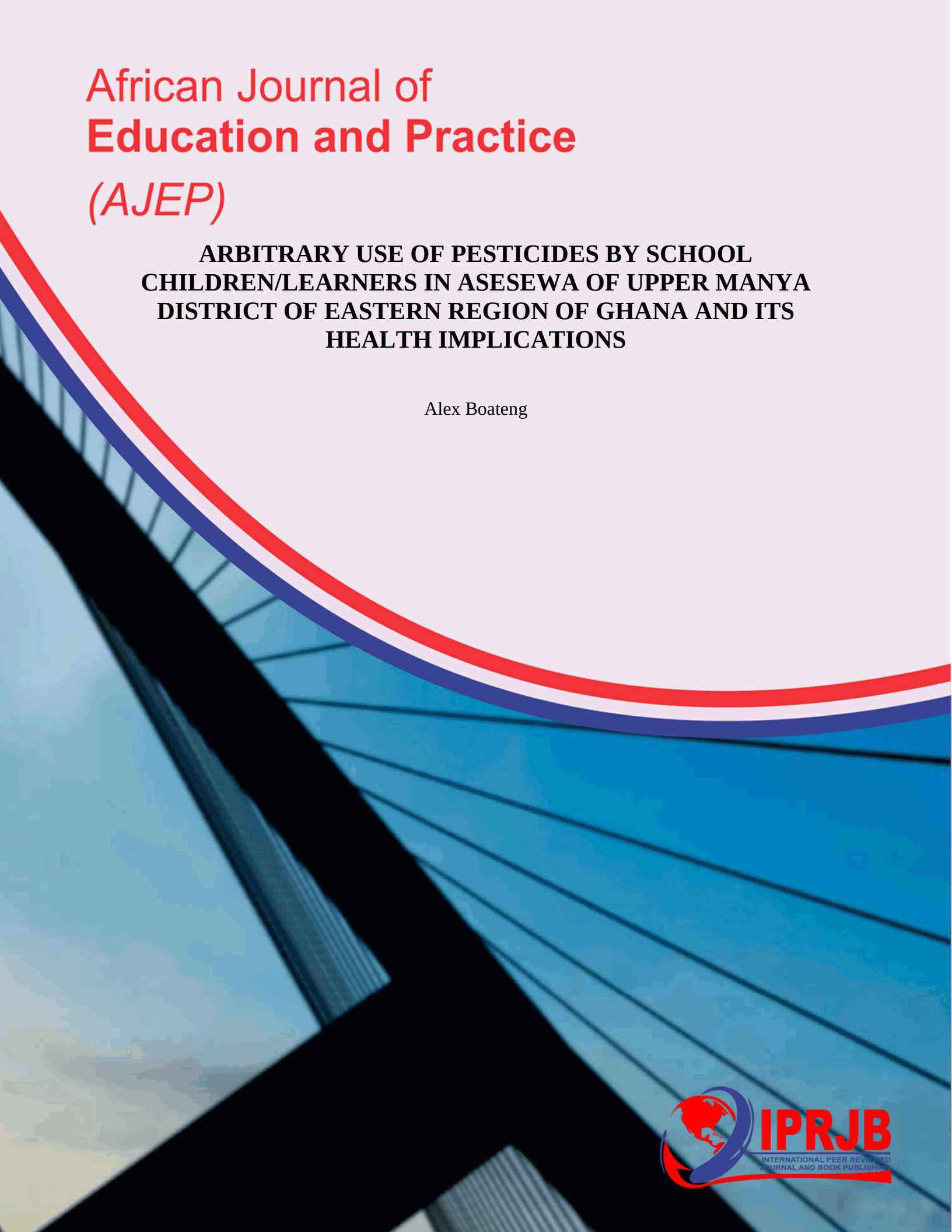
Alex Boateng



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Abstract

Purpose: The researcher sought to investigate into the arbitrary use of pesticides by thirty (30) school children or learners in the Asesewa Township of the Upper Manya District in the Eastern Region of Ghana, West Africa, where school pupils or learners use pesticides arbitrarily

Methodology: Descriptive research design was the research design used. All school learners at Asesewa Township constituted the target population. The researcher selected thirty (30) learners who were into pesticides use from three (3) Junior High Schools in the Asesewa township. Purposive sampling technique was used to select the sample size. Under this purposive sampling technique, learners who have applied pesticides before were the target and were asked to write or provide their names. Where the number exceeded ten (10) in a school, simple random sampling technique was used to select ten (10) out of the lot. Selection was gender sensitive. Interview and questionnaire were the instruments/tools used to collect data. Questionnaires containing sixteen (16) items were distributed to the learners to answer under the guidance of the researcher. The questions on the questionnaire were both closed and open ended type. Again, fifteen (15) persons in and around Asesewa town who were into the sale of pesticides or supply of pesticides to these learners were sampled and interviewed. Data collected were analyzed by converting them into percentages using SPSS and Microsoft Office Excel 2013.

Findings/results: The results showed that majority of learners (73.33%) did not read or follow instructions on pesticides labels. This phenomenon of not reading stem from the fact that most of the learners (86.67%) reportedly admitted not being able to understand the meaning of the instructions. Again, a whopping 86.67% of the respondents or learners did not seek for help to understand the instructions on the labels of pesticides. All the learners (100%) admitted having knowledge of pesticides toxicity, but the irony is that as many as 93.33% of the learners did not use any protective clothing whatsoever when applying pesticides, consequently, a significant number (93.33%) of learners admitting that their bodies itched immediately after applying or handling pesticides. All the learners (100%) did accept that they did apply pesticides in the presence of other people who did not wear any protective gear. All the leaners (100%) were unaware of the volatile nature of pesticides and how particles can drift far. Eighty-three point three, three percent (83.33%) of learners, realizing the danger that accompanied pesticides, did not use the field right after application of pesticides. Harmfully, 63.33% of the learners interviewed responded re-using empty pesticides containers for purposes such as salt container, concoction container to hunt for grass cutters, containing water to whet their cutlasses while the remaining 36.67% throw them away due to the danger in association with its re-use. It is damped on the environment just like that.

Unique contribution to theories, practice and policy: Pesticides are volatile and can drift very far from the point of application to many kilometers away but the irony was that all the leaners were not aware that pesticides were volatile and could drift very far. Consequently, the practice should be that all learners and Agricultural Science students will understand the volatility and drifty nature of pesticides so as not to apply pesticides close to human presence or habitation. Again, they should come to understand that personal protective equipment should be used or worn by the one applying the pesticides as well as by standers or those who accompany them. Again, the findings from this research work will make it imperative for pesticides manufacturers and dealers to embark on rigorous campaign exercise or education of pesticides use; the dangers in its arbitrary use and ways of applying them properly without causing harm to the environment and human beings. Per the results, the learners might have taken a lot of pesticides into their system and future research works must explore the extent of damage these pesticides have caused and can cause to learners.

Key words: *Asesewa, Upper Manya District, Volatile, Drift, Pesticides.*

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1.0 INTRODUCTION

Population of the world is increasing ascending globally and therefore a well-planned and concerted effort by agricultural scientists, extension workers, farmers and the government price support policies must be brought to ensure malnutrition and hunger are stumped out. Contribution of Agriculture to the global, particularly African, economy cannot be over emphasized. All over the world, agriculture serves as a pillar to the survival of the human race and Ghana is no exception. The Agricultural sector in Ghana has played critical and pivotal role to the national economy over the years but for the past few years the country has experienced continuous decline in Gross Domestic Product (GDP) contribution from the sector (Ghana Statistical Service, 2010-2019). Available statistics from the Ghana Statistics Service puts it that the contribution of Agriculture to Gross Domestic Product (GDP) in the other years are fast dwindling. They are; 2010-29.8%, 2011-25.3%, 2012-22.9%, 2013-21.7%, and 2014-22.0%. The rest are 2015-22.1%, 2016-22.7%, 2017-21.2% and 2018-19.7% (Ghana Statistical Service, 2010-2019). It is seen from the above figures that from 2010 to date, the contribution of the agriculture sector to the national purse is declining and by 2020 it has been estimated that it would drop further if radical interventions were not put in place. Factors attributed to the decline of the contribution of the Agricultural sector to GDP were the declining fertility of the cultivated soils in the country, pest and diseases prevalence, impassable road network, inadequate requisite knowledge of farmers among other factors were identified.

For this country to increase the contribution of Agricultural sector to the GDP and as well become self-sufficient in food production to reduce malnutrition and hunger, the use of agrochemicals such as fertilizers and pesticides must be encouraged. To achieve such targets, in 2015, 90,000 metric tonnes of fertilizer was procured and distributed to farmers countrywide under the fertilizer subsidy programme. In the ensuing year, distribution of fertilizers and pesticides to farmers continued through till date but the sad news is that the Extension Service Department mandated to educate farmers on the guidelines of their use are dysfunctional, leading to the farmers applying them anyhow(Ghana Statistical Service, 2010-2019).

Currently, pesticides use has become an integral part of the Ghanaian society and play a major role in increasing agricultural productivity. However, the rate at which it is indiscriminately use cannot be underestimated. Ideally, a pesticides must be lethal to the targeted pests, but not to non-targeted species, including man. Unfortunately, this is not the case, so the controversy of use and abuse of pesticides has surfaced. Though the use of pesticides has contributed to enhanced economic potential in terms of increased production of food and fibre and amelioration of vector-borne disease, if rules are not adhered to, there will be serious health implications to man and his environment(Ghana Statistical Service, 2010-2019).

Risk posed by the use of pesticides

There is now overwhelming evidence that some of these chemicals do pose a potential risk to human and other life forms and unwanted side effects to the environment (Ogbeidea *et al.*, 2016; Williamson, 2003; Forget, 1993; Igbedioh, 1991; Jeyaratnam, 1981). Agrochemicals are highly toxic and have been associated with serious human health and environmental damages (Ogbeidea *et al.*, 2016; Williamson, 2003; Briggs *et al.*, 1989). Extensive use of agrochemicals in the Agricultural field is among the most prominent sources of groundwater contamination

(Toccalino *et al.*, 2014; Singh *et al.*, 2004). In the daily graphic, on the 23rd April, 2018 (page 16) a family lost three (3) children to insecticides poisoning in Ghana and this raised concerns in the country about agrochemicals use. It is believed that most of the farmers or people who use or sell agrochemicals in these countries are uneducated or lack the knowledge in the field of agrochemicals. If pesticides are indiscriminately used, they can lead to destruction of soil, air and water contamination (Toccalino *et al*., 2014; Bedos *et al.*, 2002, Arias-Estevez *et al.*, 2008)

Unsafe pesticide use or misuse in developing countries includes the use of pesticides banned by the local government (Van Hoi, *et al*, 2009), lack of self-protection (Stadlinger *et al.*, 2011) incorrect pesticide storage (Ibitayo, 2006), over spraying (Grovermann *et al.*, 2013), improper handling of pesticide containers and, in extremely cases, reuse of washed pesticide container as containers for food and drinking water (as reported by 35.4% and 77.2% of farmers in Nigeria and Ethiopia, respectively.

According to Vlahodimo, (1990) retailers provide little or no advice; very few farmers can read or understand labels and few had any training on safe use of pesticides. This pictured here is not far from the Ghanaian context where most of the persons who use these pesticides are either uneducated or cannot understand what they read but receive no or little explanation from retailers. The arbitrary use of these chemicals results in adverse effects on the environment and has dire health implications on human. It should be noted that washing and peeling cannot completely remove the residues of pesticides (Reiler *et al.*, 2005). Pesticides residues have also been detected in human breast milk samples and there are concerns about pre-natal exposure and health effects in children (Pirsahab *et al.*, 2015; Damgaard *et al.*, 2006). Residue of pesticides can be found in a great variety of everyday foods and beverages including cooked meals, water, wine, fruit juice refreshments and animal feed (Chourasiya, 2015; McGill & Robinson, 1968)

No segment of the population is completely protected against exposure to pesticides and the potential serious health effects, through a disproportionate burden, is shouldered by the people of developing countries and by high risk groups in each country (WHO, 1990). The world-wide deaths and chronic diseases due to pesticides poisoning, number about one million per year (Environews, Forum 1991). The high risk group exposed to pesticides includes production workers, formulators, sprayers, mixers, leaders and agricultural farm workers.

When a pesticide is released into the environment many things happen to it. Sometimes the leaching of some herbicides into the root zone can result in better weed control and at times releasing pesticides can be harmful as not the entire applied chemical reaches the target site (Cesna *et al.*, 2005) the behavior of pesticides in soils is governed by variety of complex dynamic physical, chemical and biological processes, including degradation, uptake by plants, run off and leaching. The relative importance by these processes varies with chemical nature of these pesticides and the properties of the soil (Anas-Estevez *et al.*, 2008)

Over the years, relatively large quantities of toxic agrochemical pesticides have been used in fresh export vegetables, mainly in order to satisfy export markets' demand for aesthetic appeal (Mwanthi & Kimani, 1990). At the same time, farmers, farm family members and farm workers have been careless or ignorant of the dangers of exposure to these toxic substances resulting in major health impairment (WHO, 2004)

A highly proportions of pesticides poisoning and deaths occur in developing countries where there are inadequate occupational safety standard, protective clothing, and washing facilities; insufficient enforcement; poor labelling of pesticides; illiteracy and insufficient knowledge of pesticides hazards (Pimentel & Greiner, 1996). Throughout the world the highest levels of pesticides exposure are found in farm workers, pesticides applicators and people who live adjacent to heavily treated agricultural land. Because farmers and farm workers handle 70-80% of the pesticides they use, they are at the greatest risk of exposure (McDuffie, 1994).

Most insecticides such as organophosphate, carbamates and organochlorines are dangerous (Zhang, 2007) easily penetrate the skin (Kanga *et al*., 1993). Pesticides mixers and applicators are mostly exposed through pesticides contact with exposed skin especially if no protective clothing is used while most cases of accidental pesticides ingestion by mixers and applicators take place when, for example, they eat, drink and/or smoke during mixing or spraying process (Rola & Pingali, 1993; Cole *et a.,* 1999). Bystanders and farm family members are exposed to pesticides when for example enter a sprayed fields, work in the field while it is being sprayed, inhale pesticides vapour, an aerosol droplets drifted by wind or reuse pesticides containers (Ohayo-Mitoko *et al.,* 1997) . The many negative health effects that have been associated with chemical pesticides include dermatological gastrointestinal neurological, carcinogenic, respiratory, reproductive and endocrine effects (Sanborn *et al.,* 2017; Alewu & Norisi, 2011; Mnif *et al.,* 2011 WHO, Public Health, 1990). Furthermore, high occupational, accidental or intentional exposure to pesticides can result in hospitalization and death (Gunnel *et al.,* 2007; WHO, 1990)

Vulnerability of children to harmful effects of pesticides

Children and indeed any young and developing organisms are particularly vulnerable to the harmful effects of pesticides (Sattler & Davis del, 2008). Even very low levels of exposure during development may have adverse health effects. Newborns and infants have rapidly developing neurological pathways and attain several developmental milestones in the first years of life (Sattler & Davis del, 2008) making children particularly vulnerable to the effects of pesticides. Children's organs are not fully developed until later in life. They continually experience critical periods in development; adverse exposure can cause permanent damage particularly in utero. Children are at risk from exposure to pesticides because of their small size. Children eat, drink and breathe more than adults. Their bodies and organs are growing rapidly which also make them more susceptible; in fact, children may be exposed to pesticides even while in the womb. Lower cognitive scores, fewer nerve cells and lower birth weight, can lead to Parkinson's disease. Pesticides accumulation may lead to liver and kidney damage, blood and brain disorder, reproductive damage (Perry et al, 2014; Chalukpa & Chalukpa, 2010).

Children live closer to the ground than adults, which may increase their exposure to pesticides sprayed or precipitated there (Paulson & Barnette, 2010). Children's behaviour or ability to interact with their physical environment change during different stages of growth and development and can place them at greater risk of exposure; children may crawl on the floor; explore objects orally, and play with items they find in the environment (Landrigan *et al.*, 2004). Pesticides exposure cause a range of neurological health effects such as memory loss, loss of coordination ability, reduced speed response to stimuli, reduced visual ability, altered or

uncontrollable mood and general behavior and reduced motor skills (Harari *et al*., 2010; WHO, 1990). These symptoms are often very subtle and many may not be recognized by the medical community as a clinical effects include Asthma, allergies and hypersensitivity, and exposure is also linked with cancer, hormone disruption and problems with reproduction and fetal development.

Ghanaian Situation

Christian Aid Partner Northern Presbyterian Agricultural services (2012) found that more than a quarter of farmers interviewed in the Northern Region of Ghana had suffered from directly inhaling pesticides. Many had also spilt the chemical on their skin. Chemicals are often kept near their food stores- a practice believed to have caused the death of fifteen (15) farmers in late 2010 through seepage. In addition, farmers regularly put wrong pesticides on crops, use stocks that are past expiry date and spray to close to harvest time (Christian Aid, 2012). This situation is not entirely new in the other parts of the country. It pertains in all the regions due to total neglect by the powers be to ensure that proper thing is done. As carried by the daily graphic, 23rd April, 2018 (page 16) where a family lost three due to pesticides poisoning but sadly enough not much is been done to educate the masses on the harmful effects of the arbitrary use of the

The Survey "Ghana Pesticides Crisis"- The Need For Further Government Action, seven (7) banned or restricted pesticides appear still be in use in Ghana, with government failing to act, despite the fact that numerous academic studies show alarming levels of poisoning among farmers and the public (Christian Aid, 2012). Globally, much has been done in establishing the harm that accompanies the use of chemical without adhering to proper procedural processes and the enforcement of regulations governing pesticides use. Several epidemiological studies reported in the last two decades suggest harmful; effects of pesticides on human health, including a possible relationship between pesticide use and cancer, leukemia and various types of solid tumor (Akyil, 2015). But little has been done, in terms of establishing the consequential effects of arbitrary use of pesticide in our Ghanaian community, particularly, the rural communities like Asesewa, where different types of dangerous or harmful pesticides are used ignorantly arbitrary. The irony is that most of these users are children who are vulnerable to its use. Children live closer to the ground than adults, which may increase their exposure to pesticides sprayed or precipitated there (Paulson & Barnette, 2010). Again, children and indeed any young and developing organisms are particularly vulnerable to the harmful effects of pesticides (Sattler & Davis del, 2008). Their bodies and organs are growing rapidly which also make them more susceptible; in fact, children may be exposed to pesticides even while in the womb.

It is in this light that this research seeks to;

1) assess pupils knowledge and perceptions of agrochemical pesticides use in crop production with the view of providing appropriate suggestions for rational and feasible weeds and pests control
2) Identify how pupils get contaminated, more importantly, the indirect means by agrochemical pesticides, and their effects and assess ways of reducing the menace.

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2.0 RESEARCH METHODOLOGY

The study was conducted in Asesewa, a peasant farming community in the Upper Manya District of Eastern Region in Ghana, West Africa. It is the district capital of Upper Manya Krobo District. Its geographical coordinates are 6^0 23' 0" North, 0^0 80' 0" West. The people in Asesewa are predominantly peasant farmers and grow almost any food crop and vegetables eaten by the people of Ghana. Farming is their major source of livelihood and income. To boost crop yield, most of these farmers and their children depend on agro chemicals such as fertilizers and pesticides to boost production and control pest and weeds respectively.

The research design used was descriptive research design. The target population is the entire school learners at the Asesewa Township. The researcher selected thirty (30) learners who were into pesticides use from three (3) Junior High Schools (JHS) in the Asesewa town. The Schools the learners were selected from were; Asesewa Roman Catholic Junior High School, Asesewa Presbyterian Junior High School, and the Asesewa Methodist Junior High School. Ten (10) learners were purposively selected from these schools. Learners who have direct use of pesticides were selected. Under this sampling technique, learners who have applied pesticides before were asked to write down their names. Where the number exceeded ten (10) in a school, simple random sampling technique was used to select ten (10) out of the lot. Selection was gender sensitive. In all, thirty (30) learners were selected for the exercise.

Interview and questionnaire were the instruments used to collect data. Questionnaires containing sixteen (16) items were given to the learners to answer under the guidance of the researcher. The questions on the questionnaire were both closed and open ended type. The questionnaires were self-administered by the researcher in the schools of these pupils. Again, fifteen (15) persons in and around Asesewa town who were into the sale of pesticides or supply of pesticides to these learners were sampled and interviewed. Data were collected and converted to percentages using SPSS and Microsoft Office Excel 2013. Results generated from the data collected have been displayed at the results column.

3.0 RESULTS

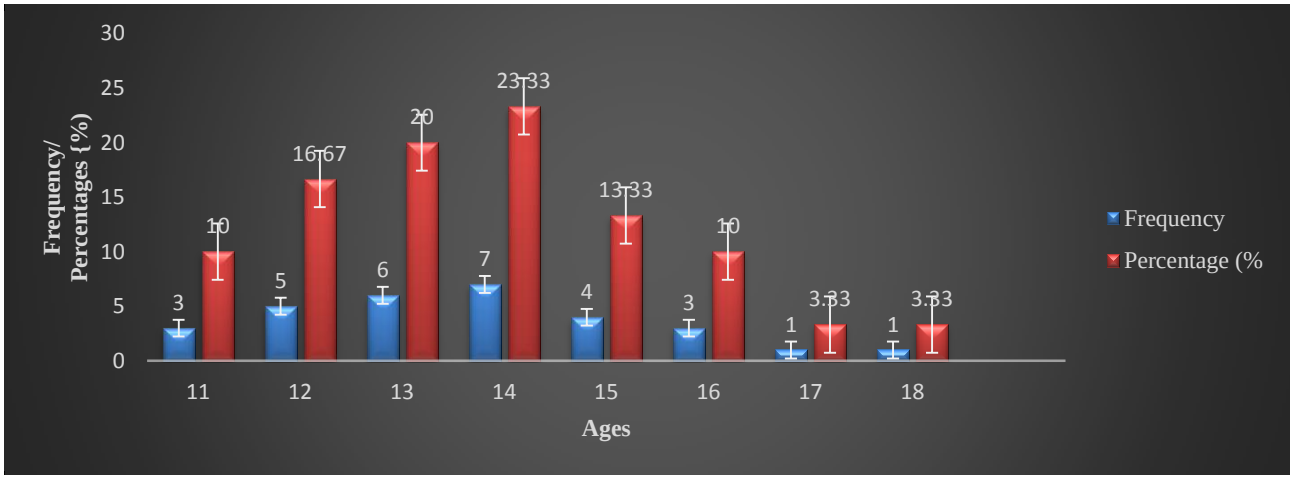

Figure 1: Age distribution of learners

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From figure 1, three (3) learners, representing 10%, were 11 years old, five (5) learners, representing 16.67% were 12 years old while six (6) learners representing 20%, were 13 years. Again, seven (7) learners representing 23.33% were 14 years old, four (4) learners, representing 13.33% belonged to 15 year group. Three (3) learners, representing 10% were in the category of 16 years, a learner (1) each belonged ages 17 and 18 and this also represents 3.33% each.

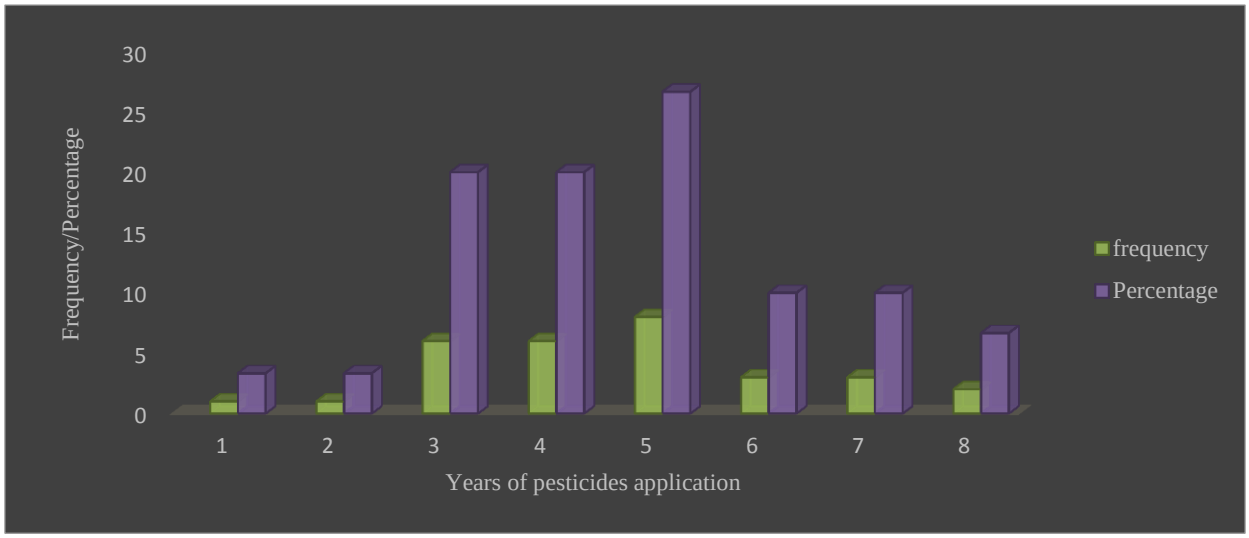

Figure 2: Years of pesticides application by Learners

From figure 2 above, one (1) learner, representing 3.33%, has had a year experience e with pesticides application. Another one (1) learner, which is 3.33%, has been applying pesticides for two (2) years while six (6) learner, representing 20%, claimed to have interacted with pesticides for three (3) years. Again, another six (6) learners, which is 20%, said they have been applying pesticides for four years. A whooping eight (8) learners (26.6%), accepted the fact that they have been doing pesticides application for five (5) years, three (3) other learners (10%) also have been applying pesticides for six (6) years while another three (3) learners (10%) claimed to have applied pesticides for seven (7) years. Two (2) learners (6.67%) said they have been dealing with pesticide application for eight (8) years.

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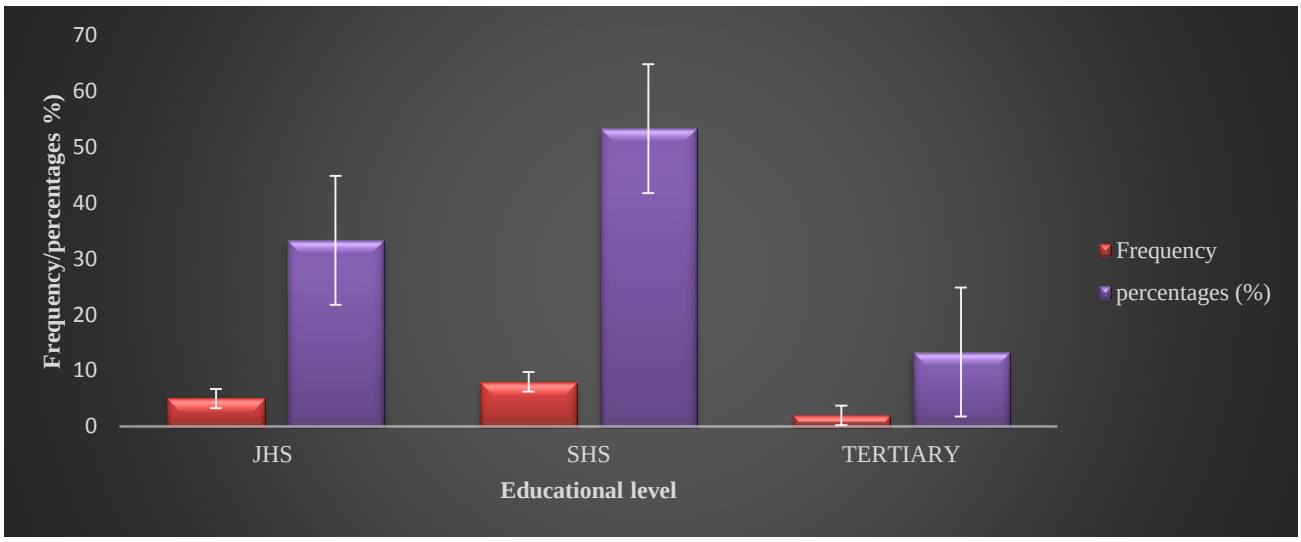

Figure 3: Educational level of pesticides sales Agents - JHS (Junior High School) SHS (Senior High School)

Five (5) sales agents had Junior High School Certificate, eight (8) sales agents possess Senior High School Certificate and just two (2) had Tertiary certificate. These translate into 33.33%, 53.33% and 13.33% respectively (figure 3)

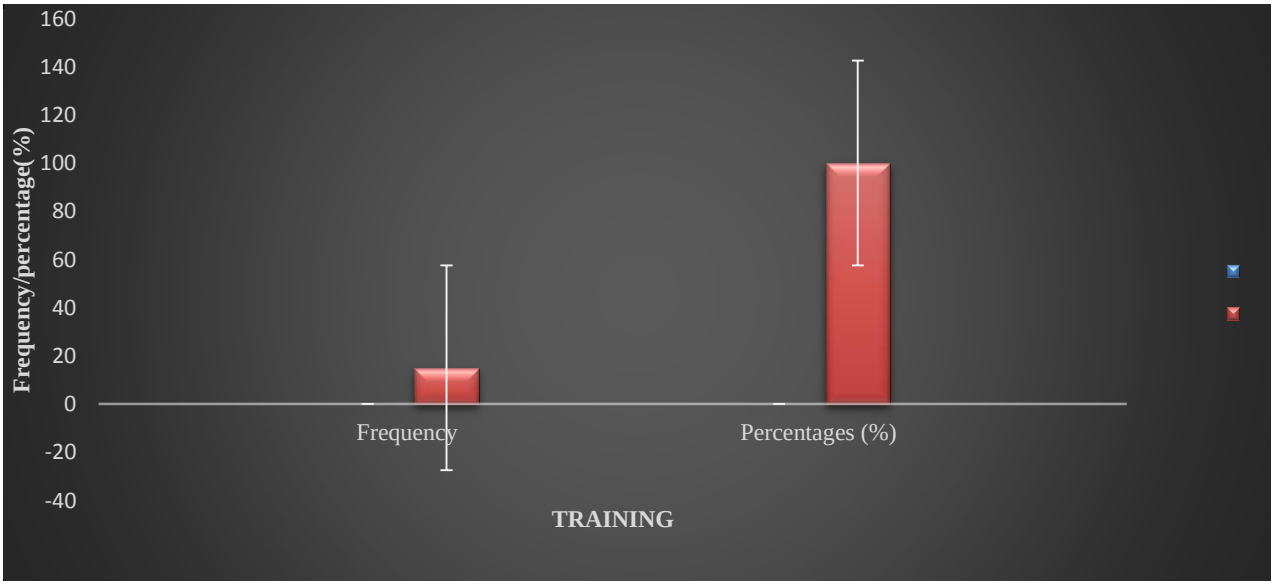

Figure 4: Type of training received by Pesticides Retailers

All the fifteen (15) Sales Agents interviewed admitted not having received any formal training whatsoever from any entity and therefore are there base on the on-the-job-training received from shop owners (Figure 4)

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Table 1: Pesticides use; Response from Learners

Statement	Score			
	Yes		No	
	Frequency	(%)	Frequency	(%)
Do you read labels on pesticides package before use?	8	26.67	22	73.33
Do you understand the instructions on the label if per chance you read or read to by somebody?	4	13.33	26	86.67
Do you seek for help if one cannot understand?	4	13.33	26	86.67
Do you eat or drink while applying pesticides?	1	3.33	29	96.67
Are you aware of pesticides toxicity?	30	100	0	0.0
Do you wear personal protective gears during pesticides application?	2	6.67	28	93.33
Do you spray in the presence of others?	30	100	0	0.0
If yes, those present do they cover or protect themselves?	0	0.0	30	100
Are you aware of the volatility and drift nature of pesticides	0	0.0	30	100
Have you ever used bare hands to open and close pesticides container?	25	83.33	5	16.67
Do you determine wind direction before and during application of pesticides?	9	30	21	70
Do you experience body itching after pesticides application?	28	93.33	2	6.67
Do you wash your hands with soap or bath right after application of pesticides?	26	86.67	4	13.33
Do you work on the field right after pesticides application?	5	16.67	25	83.33
Do you use the empty pesticides container for any other purpose(s)?	19	63.33	11	36.67
If yes, state the purpose	Salt container or container for concoction to kill grass cutter			

Regarding reading labels on package before pesticides were applied or used, the majority of learners (73.33%) did not read or follow instructions on pesticides labels while the other 26.67% did read the read instructions though they more often did not understand. This phenomenon of not reading stem from the fact that most of the learners (86.67%) reportedly admitted not being able to understand the meaning of the instructions. Just 13.33% said they understood the instruction. Asked if they sought for assistance in order to be able to understand the instructions, a whopping 86.67% of the respondents or learners did not seek for help to understand the instructions on the labels of pesticides whiles the remaining 13.33% respondents accepted that they sought for help when they did not understand the instruction. All the learners (100%) admitted having knowledge of pesticides toxicity, consequently 96.67% acknowledging that they had never eaten nor drunk while applying pesticides.

Wearing protective clothing is very important in the whole business of preventing pesticides from entering the body to cause mayhem. As many as 93.33% of the learners did not use any protective clothing whatsoever when applying pesticides while just insignificant 6.67% reported to have used protective equipment during application though 100% of learners claimed to have knowledge about toxicity of pesticides. No wonder a significant number (93.33%) of learners admitted their bodies itched immediately after applying or handling pesticides while the rest (6.67%) of the respondents or learners said they did not feel any body itch.

All the learners (100%) did accept that they did apply pesticides in the presence of other people who did not wear any protective gear. Perhaps they did the application in the presence of other people because they (learners) did not know pesticides were volatile and could drift very far; almost three kilometers away from the point of application and can be in the atmosphere for a week or two weeks-100% learners were unaware of the volatile nature of pesticides and how particles can drift far though 70% claimed to determining direction of wind before application of pesticides while the remaining did not determine. .

Asked whether they washed down or washed hands after applying the pesticides, 86.67% accepted bathing or washing hands with soap right after application due to its high toxicity and ability to enter the body, causing harm while the remaining 13.33% did not bath or wash hands with soap. Eighty-three point three, three percent (83.33%) of learners, realizing the danger that accompanied pesticides did not use the field right after application of pesticides but the 16.67% used the field right after application.

Dangerously, 63.33% of the learners interviewed responded re-using empty pesticides containers for purposes such as salt container, concoction container to hunt for grasscutters, containing water to whet their cutlasses while the remaining 36.67% throw them away due to the dander in association with its re-use. It is damped on the environment just like that.

4.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Ages of Leaners

The ages of the learners used for the study stretched from 11 years to 18 years with majority of them falling within 14 years. The age of the learners suggests that learners were dangerously predisposed to the pesticides at a tender age and this suggests that majority of learners were susceptible to the danger that the exposure to pesticide brings due to the fact that young people are vulnerable to pesticides damage as a result of their organs not fully developed at that age and can result in permanent damage as observed by Chalukpa and Chalukpa, (2010).

Years of pesticides Application by Learners

Majority of the students have been overwhelmingly applying pesticides chemicals for a very long time considering their ages and the number of years they have been dealing with pesticides application. This phenomenon give cause to be worried taking into cognizance the fact that most of these learners lacked basic knowledge of volatility and drift nature of pesticides and failed to protect themselves or by standers. This means for all these years these learners have taken the chemical into their body systems and also given it other people. Kanga *et al*., (1993) made similar assertion that unprotected application results in pesticides permeating the skin.

Level of Education of sales Agents

Again, it is evidently clear that most of the sales agents were JHS and SHS graduates who have received no formal education or training regarding pesticides use, consequences of pesticides on the environment and effects of arbitrary use on both human and the environment. This suggests they can provide little or no advice to purchasers or buyers. According to Vlahodimos (1990) retailers provide little or no advice; very few farmers can read or understand labels and few had any training on safe use of pesticides. Retailers provide little or no advice because they

themselves lack the knowledge as it is a case here. It was even gathered that most of these JHS and SHS graduates do not stay there for more than two (2) or three (3) years and they leave for further studies, creating knowledge gap.

Training received

It became evidently clear that sales agent received no formal training before or after appointed to man such chemical shops, consequently can offer little or no advice concerning the safe use of the pesticides bought from them. The only knowledge they can boost of is the on-job-training given them by inexperienced shop owners and the implication is that wrong advice can be given to persons who buy from them.

Pesticides use: Response from Learners

Though the use of pesticides has contributed to enhanced economic potential in terms of increased production of food and fibre and amelioration of vector-borne disease, if rules are not adhered to, there will be serious health implications to man and his environment. According to Ogbeidea *et al., (*2016), Forget, (1993,) Igbedioh, (1991,) & Jeyaratnam, (1981); there is now overwhelming evidence that some of these chemicals do pose a potential risk to human and other life forms and unwanted side effects to the environment according to. But sadly, response from learners paint a rather bizarre situation.

From the results majority of the learners admitted neither they nor their parents or guardians did read the labels or instructions on the pesticides packages before application. This observation is line with similar observation made by Vlahodimos (1990). According to Vlahodimos, (1990) retailers provide little or no advice; very few farmers can read or understand labels and few had any training on safe use of pesticides Again, majority of them failed to seek for help regarding understanding of the instruction. What this means is that there is the likelihood of over application of pesticides, application of stocks that are past expiry date or the likelihood of regularly applying or putting wrong pesticides on crops as well as applying too close to harvest time. Over application may lead to over concentration of pesticides material in the environment which may travel to rivers, lakes, lagoons or seep down to underground waters to contaminate them to pose health risk to persons who drink from these sources. Pesticides accumulation in the system from such an instance may lead to liver and kidney damage, blood and brain disorder, reproductive damage, autism, lung cancer, Parkinson's disease and cancer, especially in children due to their small sizes and high rate of respiration. These diseases may prevent learners from achieving their dreams of learning to the highest ladder of the academics and in some cases some will have their lives cut short. Over application of pesticides may lead to production of food stuffs with high pesticides content and eating food treated with chemical pesticides increases the rate of child type-1 diabetes in children which is in agreement with findings done by Doaa *et al*, (2012).

With the exception of two (2) learners, all the learners showed potentially unsafe behavior with respect to personal protection equipment. Meaning, majority of the learners did not wear protective cover or gear when doing pesticides application. Some wore just Wellington boots, thinking that was enough protection for the application to be done. Some even wore short and that is enough for them. It was normal to do the application without any sort of protection since

their parents also do it without any protective gear forgetting that pesticides can enter the body through inhalation, ingestion, or absorption by the skin or eyes. The skin usually receives the most exposures so it is important to cover as much of the body as possible, no wonder almost all the learners accepted that their skin itched them after application. Almost all the learners complained of skin itching after the pesticides application. This is enough evidence to suggest that pesticides entered their system any time they did the application which may turn to affect their liver, kidney, brain and reproductive organ adversely as suggested by Chalukpa and Chalukpa, (2010) that most young people who are exposed to pesticides without protective equipment are likely to suffer liver, kidney and lung damage. This means most of these kids may truncate their education or may not be able to learn well due to pesticides effects. It is important to understand that pesticides are highly toxic nerve poisons intentionally designed to damage biological processes within living organisms, which is why even low levels over extended periods would be expected to cause harm and decreased function in cells and body defense mechanisms

Again, dangerously, almost all the learners did the application in the presence of either their friends, parents, bystanders or siblings who were not wearing any protective gear, forgetting the particle and vapour drift capability of pesticide. This is in line with suggestion by Ohayo-Mitoko *et al.*, (1997), who said bystanders and farm family members are exposed to pesticides when, for example, enter a sprayed fields, work in the field while it is being sprayed, inhale pesticides vapour, an aerosol droplets drifted by wind or reuse pesticides containers . Pesticides have fine particles or droplets which move into the air during its application. It is also able to move out in gaseous or vapor form during its application. This suggests that those whose presence the application is done are likely to be affected adversely by the pesticides than the one spraying it. This again means majority of children and adult alike were inhaling and absorbing pesticides unaware. This may damage their brains, liver, kidney or poison their blood if the phenomenon continues for a while. This exposure can cause a range of neurological health effects such as memory loss, loss of coordination ability, reduced speed response to stimuli, reduced visual ability, altered or uncontrollable mood and general behavior and reduced motor skills to those whose presence is the pesticides done (WHO 1990). Learners who find themselves in such a category may find it difficult to do well or learn in class.

According to Kanga *et al*, (1993), most insecticides such as organophosphate, Carbamate and Organochlorines easily penetrates the skin. Most of the learners complaining about body itching after spraying and this phenomenon could be attributed to the fact that majority of the learners did not wear protective clothing or used bare hands to open the package. This phenomenon shows that most of the chemicals entered the skin and poison the blood or systems of these learners and this triggered the itching. It was seen that most of these learners had to travel miles home before they wash down and before that the chemical might have entered the bloodstream to cause havoc to their system.

In many developing countries empty pesticides container are highly valued property. Even though it is usually impossible to remove all traces of toxic chemicals from pesticide containers, people often use them for storing fuel or even food and water http;//www.fao.org/agriculture/crops/obsolete-pesticides/what-dealing/containers/en/. In this research, though the learners were aware of the danger pesticides poses, empty containers were

used to store salt and concoction to kill grass cutters. They claimed to wash the containers thoroughly so much so that the containers were free from the toxic elements in the container but evidence of farmers' reuse of empty pesticides containers has been reported in many studies (Dalvie *et al.*, 2005). Traces of toxic elements in this container will dissolve into the salt or the concoction which as well posed and poses health risk to the leaners. This is clearly an unsafe practice that must be discouraged in no uncertain terms. To reduce or eliminate the danger that used pesticides containers pose manufacturers and distributors of pesticides are expected to provide facilities that allow pesticides users to dispose of empty containers.

Conclusion

Of great concern, health effects as a result of arbitrarily use of pesticides is not to those who use or come in direct contact with pesticides but by standers, those living few meters away from agricultural fields and children who play on grounds that have received pesticides. Results show that learners in Asesewa township lives are in danger, judging from the fact that majority of the learners are ignorant of the pathway of pesticides into their environment and their skin, the dire consequences that exposure to pesticides bring to them, consequently arbitrarily exposing the environment, themselves and other people to the toxic substance. It is also clear that if education on the use of pesticides is not stepped up the learners will suffer from a lot of health related issues such as damaged brains, liver, kidney or poisoned blood if the phenomenon continues for a while. This exposure can also cause a range of neurological health effects such as memory loss, loss of coordination ability, reduced speed response to stimuli, leukemia,, brain and other cancers, reduced visual ability, altered or uncontrollable mood and general behavior and reduced motor skills; meaning most leaners will have difficulty in learning, some may have to truncate their education along the line (Allsop *et al*, 2015). Several epidemiological studies reported in the last two decades suggest harmful; effects of pesticides on human health, including a possible relationship between pesticide use and cancer, leukemia and various types of solid tumor (Akyil, 2015). Some result in death in severe instances. According Gudrun et al, (2003), the women exposed to chemicals such as pesticides, "blue death", and organophosphate were more than six (6) six times as likely to have babies born with birth defects as were those to no chemical.

The above assertions must guide major stakeholders in education to take the issue of arbitrary pesticide application in Asesewa seriously and put up projects to embark on sensitization campaign to curb the menace.

Recommendations

Manufactures and dealers of pesticides must embark on rigorous campaign exercise to educate learners, students as well the general populace regarding proper pesticides application procedures and the dangers in association with disregarding such procedures so as to avoid or reduce dangers or havoc caused pesticides in towns such as Asesewa. Follow up research/investigation in this field must be replicated in many parts of the country since the phenomenon observed here do exist in most part of the country. A more serious research work must be conducted into the dealers of pesticides, especially those who sell the pesticides in terms of their educational background, knowledge and other areas of their lives that may affect pesticide use. Blood samples of learners must be taken and subjected to series of analyses to know the extent of exposure of these learners to the pesticides and possible remedial measures that can be adopted

to remediate the situation. Children who have not attained 18+ years of age should not be allowed to apply pesticides since children are known to be vulnerable due to the developing of their organs.

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