Legal Implications on Mismanagement of Agrochemicals in Smallholders' Agro Production in Malaysia

Alizah Ali[1], Roha Mohamed Noah[2], Shaherah Abd Malik[2]

[1]*Faculty of Law,*
[2]*FPP,*
Universiti Teknologi MARA Johor,

aliza941@johor.uitm.edu.my
Tel.: +6012-6060272

Abstract

Purpose of this study is attempted to look into laws on mismanagement of agrochemicals towards the agro food production and conservation of ecosystem in Malaysia. Artificial fertilizers, fungicides, herbicides and insecticides in manageable of rural farmers' food yielding production could cost human hardship upon consumptions and detrimental to conservation. Economic sustainable minimal or chemical free tropical food yielding agriculture food crop not only will reap in profits in upgrading income and livelihood but will definitely create a good environment in developing countries. There are significant differences on laws on the issue of mismanagement of agrochemical application towards the production and conservation of ecosystems in Malaysia with the implementation of laws on agriculture chemicals.

Keywords: Agriculture; conservation; agrochemicals; food production

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1.0 Introduction

World agrochemical market is predicted to reach $223 billion in 2015 (2010, industry research by report linker), throughout the years, smallholders has been using a lot of agrochemicals in their production of vegetable (Legumes, leafy, tuber); fruits and cash crops either for own consumptions or sales, subsistence or monoculture in nature. Carvalho (2006) quoted that the uses of agrochemicals in a tropical country particularly fertilizers and pesticides is a common practice. Agrochemical normally comprises of herbicides, insecticides, fungicides and fertilizers. The market for agrochemicals is vast in Malaysia and Asian countries, as the weather need an application of agrochemicals to maintain and sustain the farmers' livelihood.

Farmers of the rural areas maybe illiterate or ignorance, but they knew very well those outlets to get agrochemical to protect their crops, because that is their livelihood. The whole families depend on the output of their effort in toiling and harvesting the agro produces for the consumers' market throughout the country.

It is an issue for the suppliers who sell agrochemicals to the farmers that they may know the process of selling the agrochemicals by mere register and applying license to sell agrochemical in their premises. But, do we have any governmental rules, regulations or laws on mismanagement of the chemical, and does its impact human and environment of the country? What are the short and long term outcome of agrochemical that detrimental mankind and the environment? What are the combine efforts by the tripartite of government-Agro suppliers-farmers to eradicate or educate the stakeholders in the agriculture industry? As well as consumer awareness towards the buying and consumption of agro produces?

2.0 Review of Literatures

It is very seldom for the retailers to advice the farmers the process of application, safe usage and safe keeping that smallholders should take. Akinpelu et.al(2011) has revealed that the health impacts of agrochemicals both pre and post emergence herbicides, insecticides, pesticides etc. used in cassava production are a function of their degree of accumulation in environment sink – soil , air, water, plant and the degree to and form in which humans are exposed to them. Hence, the harmful agrochemicals applied on the plants and soils will definitely hazardous to mankind and ecosystem if uncheck.

Although there are regulation enforced by the governmental on supervision, penalties and advisory panels but they seldom practiced what are supposed to do. There are also lack of studies on the impacts of agrochemicals on human and environment. Once the ecosystem destroyed would not be revert again. Agrochemical even will affect the farm pest. Rohr et.al (2008) discovered that usage of the herbicide, atrazine and phosphate has caused the decline in farm amphibian like frog.

Fianko et.al (2011) shown that wide spread of agrochemical in Ghana has contributed to increased food supply and improved public health, but it has caused tremendous harm to environment. Evidence shows farmers have overused agrochemicals especially pesticides, biological monitoring studies that farmer are at higher risk for acute and chronic health effects

associated with pesticides due to occupational exposure. Therefore, after tax, the application of agrochemicals should be monitored by government.

Tekwa et. al (2010) has survey in Digil, Gella, Lokuwa and Shuware in Mibi environment shows that three principle farm hazards management namely week, insects and soil fertility surveyed, insecticides application was accounted as the highest (70%) source of form hazard in Gella, farmers' health hazard, crop damage and animal health hazard recorded of tremendous losses. Maduka (2006) has quoted that agrochemicals such as herbicides, pesticides, halogenated polycyclic hydrocarbons has exposed man and animal health wise. Whereas Glenn and Toole (1997) also quoted that agrochemical form the biggest percentage of pollutants that contaminate the environment, the hazardous particles from agrochemicals has polluted the environment once apply, into water, atmosphere and soil.

Okoye (1992) survey that crop planted on soils polluted by agrochemical varying concentrations. While absorbing water and nutrients from the soil, plants take up the chemical. The agrochemicals cannot be degraded because it lacks the enzyme machinery to degrade and excrete them. They are deposited in tissues and cellular structures including those of edible parts that are not active in metabolism. Magauzi et.al(2011) says that the prevalence of organophosphate poisoning, indicated by cholinesterase activity of 75% or less is 24.1%. The medium period of exposures to agrochemical was 3 years.

3.0 Discussion

As far as tropical agriculture are concern, most of the underlying concerns are the countries that lies in these regions are comprising of the countries where the climate changes limitedly, the evaporation and precipitation rate is high, warm and humidity causes a lot of insects eggs to hatch into larvae within the 14 days cycle. The evergreen and lush vegetation attracted a lot of insects and the infestations of insects on the grown agro greens are not be able to harvest on time within that 14 days hatching cycle of those insects and will be destroyed by its larvae and warms before the insects will goes for another hatching cycle under the soil. The only way out that farmers are able to get a par of whatever they have invested in their plot of vegetable land is using Agro insecticides.

Literate and ignorance

Rural farmers are illiterate and ignorance in the usage of agrochemical. Even though, each bottle and packages of agrochemical comes with instructions but 90% of farmers do not read and follow strictly to the instruction. They ignore the amount and ratio of agrochemical that mix with water before spraying, when and the time frame to spray and types of utensils in the spraying process. These may cause skin and lung cancer after inhaling or contact directly with the banned agrochemicals. Therefore, ignorance of the farmers will suffer themselves.

Unfamiliar of Agro chemical

Some imported chemical from other countries only show their own language that could not be understand by the farmers. This unfamiliarity of agrochemicals could court danger, not only to themselves but also to consumers who buy and consume the produces.

Misuse and simply mix

Farmers normally simply mix up the agrochemical before application, example herbicide, instead of a singular type of agrochemical they spray, farmers tends to mix more than two types of herbicide for their weeding of their farm. This kind of misuses could cause hardship to everyone.

Desperation

Some situation, farmers are desperate in using the agrochemical to protect their interest. Otherwise, there will be less or no harvest at all. Undergrowth need to be clear, herbicide will have to use to, fertilizer need to be apply. When the plants start to grow, insecticides need to use to rid of those insects and worms destroy the plant. Fungus attacks the root part of plants and fungicides is needed to cure the plants. All these agrochemicals applied need careful scrutinize by experts from agriculture department. Otherwise, the misuses will cause hardship.

Hearsay

Smallholder in rural area who tends to their small plot of holding for subsistence crops will never seek any advice from qualify agriculture department staffs on the application of agrochemicals on their crops. Certain warning from government agencies was treated as hearsay. They practice what has been passed down from their elders. The farmers consume themselves of whatever Agro produces they have, therefore the first casualty in this group of people.

Middleman, credits and financing

Due to the pressures from agriculture middleman's demand for good quality Agro produces for export in regions of high demand. The smallholders use excessive agrochemicals on their crops. Sometime smallholders tends to borrow money to finance their planting and replanting of crops, they need to refurbish their loan and credits from loan sharks, they will have to produce good quality Agro produces in a fast pace, therefore, excessive agrochemicals also apply and harvest immediately after spraying. The chemical residue if uncheck, consumers who consume the produces will suffer.

Types of agrochemicals

Agrochemicals comprises of insecticide, herbicide, fungicide and fertilizer. These chemicals sold in the market either in solution form or granular, the toxicity of each type and brand of agrochemicals are label with colour like green, pink, red and black followed the severity of the toxicity with the sign of skull as a warning sign to the buyers. Agrochemicals especially insecticides are colourless and odourless. All agrochemicals posted danger and severity towards human and ecosystem if not handled and applied with care.

Insecticides sold in the open shelves in Agro retailing shop are Malathion57%; Dimethoate 38%; Cypermethrin 5.5%; Deltamethrion 1.4%. These are the common types of insecticides uses by farmers and smallholders. It is effective on Helicoverpa Armigera (Chilli borer); Cnaphalocrocis Medinalis (leaf roller); Helpopeltis Theobromae (insect sting young cocoa fruits); Cocopimorpha Cramevella; Planococcus, Apogonia (cocoa pod borer); Coptotermes

(termites); Spodoptera Litura, Curvignathus; Helicoverpa Armigera (Warms); Myzus persicae, Thrips; Plutella Xylostella; Hellila Undalis; Brevicoryre Brassicae (Leaf bugs); Valarga (grasshopper), Apogonia (Bug borer). All types of insecticides post danger to human and ecosystem. Normally, if spray on the vegetable crops, the harvesting period will be after fourteen days but due to ignorance and demand, farmers normally will harvest in the next day after spraying. Therefore, it is utmost danger to consume those Agro greens. Those consumers who know will never want to buy and consume but normally consumers in the town area will never know.

Fungicides sold openly in agro retailing shops are Macozeb 80 80%; Thiophanate-Methyl 70%; Benomyl 50%; Copper-Oxychloride 85%. It is effective on various plant root fungi and bicarptra. Fungicides may not post danger to farmers and consumers because it only will rid of those fungi that attack the root of plants especially fruit trees. Then it definitely will harm the ecosystem because the residue will affect the soil and dilute with rain water to flow into the rivers.

Herbicides or weed killers post the most dangers to human and environment, it come with many trade names but generally it comprised of herbicides for weeds like Paraquat Dichloride 13%; MSMA 55%; Glufosinate-Ammonium 13.5% (Basta 15); Glyphosate Isopropylamine 41% (Round-up). Herbicides mean to rid of bushes and small trees comprised of 2,4.D-Amine 48%; Diuron 80 80%; Metsulfuron-Methyl 20% (Ally). Normally farmers suffer bodily injuries from ignorance of spraying herbicide. Spraying must be right, protective clothing and mask must be wear and the time of the day that most suitable for spraying herbicide is early morning and evening due to less windy and calm. Otherwise, if inhaled, in the long run, farmers will contract skin and lung cancer, especially if they are using fogging machine.

Legal Provision in Malaysia are limited which only emphasizes on the issue of improper sale of agro chemicals among suppliers and rural farmers. These criminal activities must be observed in order to preserve the safety of human and conservation of ecosystem. Among the preventive action supplied by the government are by preparing the legal provision and enforcement of the law such as Pesticides Act 1974, Poison Act 1952, Food Act 1983, Environmental Quality Act 1974, Safety and Healthy Act 1994, Fumigation of Hydrogen Cyanide Act 1953 and other guidelines.

The relevant statute apply in Malaysia is Pesticide Act 1974, known as Act 149. The Act is made to control the activity of manufacturer, sale and storage, supply, register, the jurisdiction of government over the enforcement of the Act and so forth.

Section 2 of Pesticide Act 1974 defines pesticide as any substance contains an active ingredient in preparation, mixture or material that contains any one or more of the active ingredients as one of its constituent, but does not include contaminated food. Pesticide in this definition includes any Agrochemical that protect plans against insect, fungi and rodents. The terms of insecticides, fungicides, herbicides, artificial fertilizer, and regicides are within this interpretation. Section 3 until Section 6 of the Act, prescribes the Pesticides Board. The objectives of the Boards are to control the quality and activities of the agro chemicals which must be inline with the statutes and regulations.

Section 7 to Section 14 of Pesticide Act 1974 discusses the activity of importation and manufacture of pesticides by registration and permit. Hence, a person who desires to import

or manufacture agrochemicals shall apply to the Board for registration. There are several conditions that the applicant must be fulfilled such as the statement of the common name of the pesticide, its trade name, chemical name and its structural formula, the name and concentration of every ingredient including detail toxicological information on every ingredient of the pesticides. The applicant also must label the pesticide with the instruction and precautionary measure to be taken. Besides that, the report of efficacy and safety of the pesticides, a statement of the methods of determining the residue on plants or crops must be submitted to the Board. It is necessary for the applicant to submit the address of the place of business of the applicant or the place where the applicants intends to store the pesticides. If the applicant is a manufacturer, he must submit the name and address of the factory, building or premises at which the applicants intends to manufacturer the chemicals and prescribe an outline the process of manufacture the pesticides. The registration must be made with a prescribed amount of the fee. All these procedures are stated under Section 7 of the Act.

Section 8 further states that upon received the application, the Board will conduct the inquiry and investigation as to ensure that the applicant had fulfilled conditions. There are 3 conditions composed. Firstly, the Board shall confirm that the matters contained in and submitted are true. Secondly, the label and package are complied with the regulations and lastly, the chemical would be safe to human beings and animals if used or handled according to the instructions contained in its proposed label. The Board also may put any additional relevant requirement of standard specification. If the Board satisfies with the application, the Board will state the class of pesticides by assigning a registration number thereto and issue a certificate of registration to the applicant. On the other hands, the Board shall not register the chemical if not satisfied with any of those requirements.

Section 9 of the Act mention that the period of pesticide registration is only for five years and the applicant of registered pesticide may re-register the chemical at the end of every five years period. The procedure of registration is similar with the first time application. As soon as possible after the pesticides has been registered or register again, the Board shall cause the fact to be published to the Gazette together with particulars relating to identification of the pesticides. This is stated under Section 12 of the Act.

Section 13 of the Act prohibits the activities of importation and manufactures the misbranded chemical. Those who disobey this provision may be convicted to five years imprisonment or fine of fifty thousand ringgit. If the accused people repeat the conviction, he may be imprisonment for ten years or to fine one hundred thousand ringgit. However, the applicant may import the pesticide for education and research purpose. They have to apply to the Board accompany with fee. In consideration, the Board will issue the permit to import the pesticides.

The Act also discusses the activities to control the management of pesticides by licensing. Those who intend to manufacture the pesticide shall apply to the Board in the prescribed manner with a payment of fee for licenses to manufacture the pesticide. Section 15 of the Act has list down the requirements which the Board has to concern with. The conditions are the pesticide shall be registered under the Act, the applicant is technically competent to manufacture the pesticide and the applicant is aware of the toxicity of the pesticide and the

risk involve in using and handling it. If the Board satisfies with the application, the Board will then granted a license to the applicant. The licenses however, do not authorize the sale and storage of the chemical more than at one premise. Instead, the applicant shall specify the premise which storage and sale of pesticide is authorized. The applicant may sale or storage the one or more chemicals which in the same or difference class of pesticide at the premise specified. The licenses is valid for a period of three years from it's issued but may be renewed on payment of the prescribed fee.

4.0 Conclusion

In conclusion, agrochemicals manufacturer and producers, agrochemical importers, agro retailers should be register with government agro and drug agencies annually. All sales of agrochemical and applications should be supervised closely. Education is the most important factors in reducing casualties and injuries in agrochemicals application and usage. The tripartite of government-agro retailer-farmers should be collaborate in the sales, purchase and usage of agro chemicals in the farm level.

5.0 Recommendation

Farmers' activities should be scrutinized by appointed qualified agronomist in government agriculture department.

Imported agrochemicals should be registered and recorded at the national, state and district level.

Agrochemical Importers, Agrochemicals wholesalers and Retailers need to follow stringent criteria to apply for the license to operate their premises with at least a degree in agriculture or agriculture economic from the local universities.

Setting of government task forced to supervise the outlets of agrochemicals.

Supervision on the storage of agrochemicals in premises

Implementation of stringent law and regulation on the supply and usage of agrochemicals.

Acknowledgement

This is a conceptual paper, further wide scope study in empirical nature is needed to compare the legal perspectives of mismanagement of agrochemical among developing countries in the South East Asian region such as Indonesia, Thailand, Myanmar, Laos and Vietnam.

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