The Status of Pesticide Registration in Ethiopia

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Abstract

The main objective of pesticide registration is to minimize, to the extent realizable, the adverse effects of pesticides to human beings, animals, plants and the environment. The first regulation concerning pesticide registration in Ethiopia was a single article included in the Plant Quarantine Decree of 1971. However, this article was insufficient to enforce an effective pesticide registration scheme in the country. Later on, through relentless efforts of crop protection experts serving in the various government organizations and institutions, the current "Pesticide Registration and Control Special Decree No. 20/1990" was issued on September 1, 1990. According to this Decree, it is illegal to manufacture, import, sell or use pesticides that are not registered in the country. To register a pesticide in Ethiopia, data on specification, efficacy, toxicology, environmental effects, and residues in food are essential. Pesticide samples, label specimens and other supporting documents are also required. These data are evaluated first by the pesticide sub-committee and then by the Pesticide Advisory Committee. Registration is approved for pesticides that are found to be effective for the intended purpose without undue hazard to the users and the environment. A total of 59 pesticide products, consisting of 38 insecticides, 15 herbicides, four fungicides, one acaricide, and one rodenticide have been registered as of 8 January 1997.

Introduction

Pesticides are one of the most important tools in the management of agricultural pests. However, they can have adverse effects on human beings, animals, plants and the environment if the necessary precautions are not taken during storage, transportation, mixing, and application. Some pesticide traders may also supply adulterated or sub-standard pesticides and these would have a negative impact on the agricultural economy. To prevent the risks associated with pesticide usage, it is necessary to regulate the importation, sell and use of pesticides.

There has not been pesticide registration scheme in Ethiopia until recently. The first pesticide regulation was a single article included in the Plant Quarantine Decree of 1971 (GOE 1971). According to this special decree, the Ministry of Agriculture was given the mandate to control the importation, production and sale of pesticides in the country. This decree lacked the necessary details to establish an effective pesticide registration scheme. But later on, through relentless efforts of crop protection experts in various government organizations and institutions, the current "Pesticide Registration and Control Special Decree No. 20/1990" was issued on September 1, 1990 (GOE 1990). This special decree was drafted based on the FAO guidelines. It has five sections and 29 articles. According to this decree, the manufacture, importation, sale, or use of unregistered pesticides is prohibited. In addition, the importation, storage, transportation, or sale of registered pesticides is also prohibited unless they are labelled and packed in accordance with the special decree and the provisions issued thereafter. This paper briefly discusses the types of data that are required for pesticide registration, evaluation procedures followed, and pesticides currently registered in Ethiopia.

Data required for pesticide registration

Pesticide registrants are required to submit data that show that the pesticide is effective for the intended purposes without being unduly hazardous to humans, animals, and the environment when used according to the instructions given by the manufacturer. The specific data that are required for registering pesticides in Ethiopia are briefly discussed as follows.

Specifications
Pesticide specifications are required to ensure that data submitted for registration are that generated from the pesticide submitted for registration. Information required on pesticide specification includes:

- Common name of the active ingredient, according to the International Standard Organization;
- Chemical name, according to the International Union of Pure and Applied Chemistry;
- Empirical and molecular weight;
- Chemical and physical properties of the active ingredient and the formulated product;
- Method of formulation analysis;
- Storage stability at different temperatures and relative humidity.

Efficacy data
Local efficacy data that prove that the pesticide is effective for the pests and crops for which registration is requested are required from independent and recognized local institutions. In addition, data on phytotoxicity are required to prove that the pesticide is not phytotoxic when used at the recommended rate and method of application.

Toxicological data
Pesticides that are to be used in the country should not have adverse effects on man and his animals when used according to the instructions given. The toxicological data required both for the active ingredient and formulated products include acute oral LD_{50}, acute dermal LD_{50}, inhalation LC_{50}, skin and eye irritancy, and WHO classification (FAO 1989, Gaston 1986). Supplementary toxicological data on carcinogenicity, teratogenicity, mutagenicity, and neurotoxicity are also required. In addition, any available data on direct observation and health records need to be submitted.

Environmental effects data
Since most pesticides applied for pest control purposes end up in the environment, data on the effect of the pesticide on soil fauna, aquatic organisms, and non-target organisms such as birds, bees, and beneficial insects are required. Degradation of the pesticide in soil and water as well as its leaching property in soil have to be submitted.

Residues on food
Pesticide residues found on treated crops could have an adverse effect on consumers. Above acceptable levels of pesticide residues on exported agricultural commodities could also result in the rejection of the product and thereby deprive the country its foreign currency earning ability. In view of this, data on the level of pesticide residues that would remain on treated crops when the recommended rate of application is applied are required. Analytical methods for residues should also be included.

Labeling requirements
Proper labels are required on the containers in order to advise the users on the safe way of handling the pesticide. According to the provisions of the Special Decree, both Amharic and English labels are required on the pesticide package, and the labels shall contain the following information:

- Brand name;
- Common name of the active ingredient;
- Hazard diagram according to WHO;
- Batch identification number;
- Directions for use;
- Safety precautions;
- First aid advice;
- Date of manufacture and shelf-life; and
- Method of disposal.

The labels are also required to be prepared either in one- or three-panels, depending on the size of the packaging material. A one-panel label is required for packaging materials of 5 l (kg) or less, and three-panel labels for greater than 5 l (kg).

Packaging requirement
Packaging material needs to be designed in such a way that it contains the pesticide safety during transportation, storage, marketing, distribution and use, including re-use, where applicable. In addition, the package should meet the standards set by the Ethiopian Standards Authority. The specific data needed on packaging include specifications on the packaging material, size, and thickness.

Other requirements

In addition to the data stated above, there are a number of other requirements. Two types of pesticide samples have to be submitted together with the registration document. For a formulated product two lots of 500 ml (g) and for technical grade one lot of one gram need to be submitted. The registrants are also required to have manufacturing licenses in the country of origin in order to find out whether they are legal producers or not. Furthermore, the registrants are required to produce an agency agreement. This would also help to find out if the registrant is authorized to register the pesticide on behalf of the producer.

Authorization of registration

Data submitted for registration are evaluated first by a pesticide sub-committee whose members include an entomologist, a plant pathologist, a herbologist, a vertebrate pest management expert and a pesticide chemist. If the data prove that the pesticide is effective for the intended purposes without undue hazard to human beings, animals and the environment; the label and the packaging material conform to the provisions of the Special Decree and the guidelines issued there under, registration of the pesticide is then recommended. The pesticide is next evaluated by the pesticide Advisory Committee whose members include representatives of:

- the Ministry of Agriculture;
- the Ministry of Health;
- the Institute of Agricultural Research;
- the Ethiopian Standards Authority; and
- the Environmental Protection Authority

If the Advisory Committee agrees that the pesticide is effective for the intended purposes without undue hazard to people, animals, and the environment, then the request for registration of the pesticide is granted.

Currently registered pesticides

A list of the pesticides registered in Ethiopia as of January 8, 1997 is shown in Table 1. The list includes a total of 59 products. These include many of the pesticides commonly used by the smallholders for the control of migratory and non-migratory pests. In contrast, only very few of the pesticides needed by the state farmers have been registered. The list of registered, pesticides can be obtained from the Shola Plant Protection Laboratory upon the payment of nominal fees.

Table 1. List of pesticides registered in Ethiopia (as of January 1997)

Trade name	Common name	Approved use
Insecticide		
Actellic 2% Dust	Pirimiphos-methyl	Storage pests of cereals and pulses
Actellic 50% EC	Pirimiphos-methyl	Aphids on cotton
Basudin 600 EC	Diazinon	Armyworm and other pests on cereals
Curacron 250 EC/ULV	Profenofos	Whitefly on cotton
Cymbush 25% EC	Cypermethrin	Cotton pests in largescale farms
Decis 0.5 EC/ULV	Deltamethrin	African bollworm (ABW) and leafhoppers on cotton
Decis 0.6 ULV	Deltamethrin	ABW and leafhoppers on cotton
Decis 2.5 EC	Deltamethrin	ABW and leafhoppers on cotton
Diazinon 60 EC	Diazinon	Armyworm on cereals
Diazinon 10 G	Diazinon	Stalk borers on maize and sorghum
Diazol 60 EC	Diazinon	Pests of cereals, vegetables and oilseeds
Diazol 10 G	Diazinon	Stalk borers on maize and sorghum
Dursban 240 ULV	Chlorpyrifos-ethyl	Armyworm, locusts, and grasshoppers on cereals and pasture
Dursban 48% EC	Chlorpyrifos-ethyl	Armyworm, locusts, and grasshoppers on cereals and pasture
Fastac 7.5 g/l ULV	Alphacypermethrin	ABW on cotton
Fyfanow 5% EC	Malathion	Armyworm, locusts, and grasshoppers on cereals
Karate 0.8 ULV	Lambdacyhalothrin	Cotton pests in largescale farms
Karate 5 EC	Lambdacyhalothrin	Cotton pests in largescale farms
Malathion 50% EC	Malathion	Armyworm, locusts, and grasshoppers on cereals and pasture
Marshal 20 ULV	Carbosulfan	Locusts and grasshoppers
Marshal 25% EC	Carbosulfan	Aphids on cotton
Marshal 25 ULV	Carbosulfan	Aphids on cotton
Neoron 500 EC	Bromopropylate	Spider mite on cotton
Nuvacron 40 SCW	Monocrotofos	Whitefly on cotton
Phostoxin	Aluminium phosphide	Storage pests in warehouse
Polytrin C 220 ULV	Profenofos + cypermethrin	Locusts and grasshoppers
Pyrinex 24 ULV	Chlorpyrifos	Armyworm on cereals and pasture
Pyrinex 48 EC	Chlorpyrifos	Armyworm on cereals and pasture
Ripcord	Cypermethrin	ABW, leafworm, and thrips on cotton
Sevin 85% WP	Carbaryl	Armyworm, grasshoppers, and degeza on cereals and pasture
Sumithion 50% EC	Fenitrothion	Armyworm and locusts on cereals; grasshoppers under supervision of extension agents
Sumithion 95% ULV	Fenitrothion	Armyworm and locusts on cereals and pasture
Sumithion 96% ULV	Fenitrothion	Armyworm and locusts on cereals and pasture
Thiodan 25% ULV	Endosulfan	ABW on cotton, maize and sorghum
Thiodan 35% EC	Endosulfan	ABW on cotton, maize and sorghum
Thionex 25% EC/ULV	Endosulfan	ABW on cotton, maize, sorghum, and tobacco

Table 1. Cont'd.

Trade name	Common name	Approved use
Insecticide		
Thionex 35% EC	Endosulfan	ABW on cotton, maize, sorghum, and tobacco
Ultracide	Methidathion	Scale insects on citrus
Herbicide		
Agro 2,4-D Amine 720 g/l AE	2,4-D	Broadleaf weeds in wheat, barley, tef, maize and sorghum
Banvel P	Dicamba + mecoprop	Broadleaf weeds in wheat and barley
Brittox	Bromoxynil + ioxynil + mecoprop	Broadleaf weeds in wheat and barley
Codal 400 EC	Prometryn + metolachlor	Broadleaf weeds in wheat and barley
Dicopur 720 SL	2,4-D	Broadleaf weeds in cereals
Folar 525 FW	Terbutylazine + glyphosate	Broadleaf and grass weeds in coffee
Gesapax Combi 500 FW	Ametryne + atrazine	Various weed species in sugar cane
Gesaprim 500 FW	Atrazine	Complex weeds in maize and sorghum
Illoxan 28% EC	Diclofop-methyl	Wild oats and grass weeds in wheat and barley
Lasso Atrazine	Alachlor + atrazine	Annual weeds in maize, soybean and sugar cane
Primagram 500 FW	Metolachlor + atrazine	Broadleaf and grass weeds
Puma Super 75 FW	Fenoxyprop-p-ethyl	Grass weeds in wheat
Roundup 36 SL	Glyphosate	Complex weeds in coffee
Starane M 64% EC	Fluroxypyr + MCPA	Broadleaf weeds in wheat
U-46 D Fluid 72% EC	2,4-D	Broadleaf weeds in cereals and sugar cane
Fungicide		
Kocide 101	Cuprichydroxide	Late blight on potato
Ridomil MZ 63.5 W	Metalaxyl/mancozeb	Fungi on potato, tomato, pepper and onion
Ridomil 5 G	Metalaxyl	Fungi on pepper, tomato, orange, and apple
Tilt	Propiconazole	Fungi on tef, wheat and barley
Acaricide		
Mitac	Amitraz	Red spider mite and whitefly on cotton
Rodenticide		
Klerat Pellet	Brodifacoum	Store and field rats (under strict supervision of

Conclusions

The pesticide registration scheme in Ethiopia had faced a number of constraints. Of these, the most serious constraints were inability of the registrants to submit local efficacy data and prepare pesticide labels. Most registrants had great difficulty in producing local efficacy data, particularly for products that were used by large scale commercial farms. Due to this constraint many of the products that are needed in the state farms have not been registered. Since large scale commercial farms are the major users of pesticides in the country, the problem need to be solved urgently.

The problem of label preparation was overcome by organizing a training program on label preparation for prospective registrants. In addition, further support was given for registrants by editing the labels prepared by each registrant. As a result of a serious effort made, significant improvements have been made in the preparation of labels.

In general, significant progress has been made in establishing the pesticide registration scheme in Ethiopia. For the first time in the country's history, pesticides registration of pesticides had become a reality. This was made possible through the unreserved support given by many individuals and organizations.

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