

PESTICIDE ENVIRONMENTAL ASSESSMENT APPROACHES

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The procedures for regulating the pesticides use in Brazil emerged at the beginning of the 30's, under the federal government area responsible for agriculture, and added up the requirement of health assessment in the 70's. The environmental range was only inserted as a necessary element towards the regulation and control of these products in the early 90's, with the enactment of Law 7.802/89 and its regulatory Decree 98.816/90, at present revoked by Decree 4.074/02.

Currently, the pesticides assessment is a shared activity among the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the Ministry of Agriculture (MAPA) and the National Health Surveillance Agency (ANVISA).

According to the provisions of Article 7 from Decree 4.074/02, the Ministry of Environment - MMA, through IBAMA, is responsible for evaluating and ranking on the potential environmental hazards of all pesticides, their components to be registered, and also perform preliminary environmental assessment of pesticides intended for research and experimentation.

The environmental assessment, the monitoring and control of these products by IBAMA are a great challenge. Brazil has an area of 8,514,876.599 km², with six continental biomes, which corresponds to about 15 to 20% of the world's biodiversity, with a great climatic diversity due to differences in topography, altitude and dynamics of air masses, without mentioning the diversity of soils, which can lead to different environmental performances for a same substance. Over the past 20 years, IBAMA has built a legal framework aiming to regulate and specify the technical requirements for environmental hazards assessment of these products listing the characteristics that can provide an estimate of the environmental performance of them.

Among these requirements are the physicochemical properties associated with its potential for ground transportation (mobility, adsorption and solubility), its persistence (biodegradation, hydrolysis and photolysis), the potential for bioaccumulation in the food chain and toxicity to various indicator animals belonging to different trophic levels. On regards to long-term effects on mammal populations, studies are performed on the potential mutagenic, carcinogenic and embryofetotoxic of the products. The legal provision for presenting these studies are available in IBAMA's regulation 84/96 which also provides that depending on the presented results and other product characteristics may be request clarifications and additional studies to allow completion of the environmental assessment.

This information contributes to the environmental assessment development and the classification of the potential hazard of a pesticide, its components and related products (technical and formulated products). Concerning classification matters, there are 19 individual parameters, which are grouped in 8 global parameters from which is obtained the product final rating. It is to be considered that from the environmental standpoint, both persistence and bioaccumulation have a great deal of importance at the entire final classification.

It is noteworthy that the environmental assessment procedures used by IBAMA follow a "scoring system" pattern. In it, the rated products are classified into four classes according to their environmental fate and ecotoxicological characteristics, according to the balance of the evaluated parameters (persistence, transport, bioaccumulation, non-target organisms, etc.).

Thus, the final environmental classification of the product meets the following classes: Class I - highly hazardous product to the environment, Class II - a very hazardous product to the environment; Class III - hazardous product to the environment and Class IV - product less hazardous to the environment.

The final environmental rating of the formulated product is reported in the central column of the label, along with the hazard rating. Moreover, every time the results of acute toxicity studies performed on the active ingredient(s) in the pesticide formulated presents extreme hazard for any parameter there will be in the product label environmental hazards statements and disclosure dangers. In addition, provide important data concerning about pesticide potential to be persistent or transported to groundwater and surface water, and also are printed pictograms on the labels to not contaminate water environment and protect mammals and birds.

The intermediate and long term chronic studies are not classified, as well as studies on mutagenesis, teratogenesis, carcinogenesis and reproduction. However, the last ones may prevent the pesticide registration if the active ingredient reveals characteristics in disagreement with legislation requirements.

When toxicological and environmental impurities are identified in the synthesis processes of technical products, the same are controlled by observing the maximum permitted (Standard joint IBAMA/ANVISA/MAPA 2/08).

Another approach on pesticides environmental assessment is the registration of products by equivalence introduced in Brazil by the Decree 4074/02. This assessment is carried out jointly by the MAPA, ANVISA and IBAMA. The procedure adopted in the country is the one described by Food and Agriculture Organization of the United Nations (FAO) and has since been assessed about 130 technical products of various chemical groups.

The main goal at present is providing more efficiency and transparency in carrying out the IBAMA responsibilities related to the environmental assessment of pesticides. So IBAMA developed the Pesticides System for apply electronically requests for evaluation of pesticides. Furthermore, provided the Manual of Procedures for Environmental Assessment Application for registration and post-registration changes. These tools besides streamlining the technical procedures allow communication with applicants via chat and a database building that helps the assessment procedures.

The IBAMA also established this year with the publication of Instruction 17/09 the administrative procedures for environmental review of pesticides. The review under the environmental focus establishes a legal tool in order to investigate the evidence of environmental impacts associated to the use of products that are based on the same active ingredient. It is a further action to reassessing the guidelines related to use of these products and adjust its restrictions and advices if necessary. This year, the active ingredients phorate and trichlorfon were selected to review because of their restriction or prohibition of use in many countries due evidence of adverse effects to the environment.