

INNOVATIVE APPROACHES TO DEVELOPMENT AND INTRODUCTION OF REDUCED RISK PESTICIDES

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Abstract:

During the past fifteen years a reduced risk pesticide registration program has been in operation in the United States [1]. The primary objective of this program is to give registration priority and accelerated approval to products with more favorable regulatory characteristics than currently available alternatives. Since 1994 a total of 47 such reduced risk pesticides have been approved within fast track regulatory review periods, including 18 reduced risk insecticides (Table 1). The Environmental Protection Agency (EPA), which administers the program, defines a reduced risk pesticide as one that:

- reduces pesticide risks to human health and non-target organisms
- reduces the potential for contamination of valued environmental resources
- broadens adoption or increases the effectiveness of integrated pest management programs

The EPA reduced risk program has been strongly supported by industry, where R&D programs have emphasized innovative approaches to discovery and development of new reduced risk active ingredients. In addition to the initial registration approval, reduced risk classification also confers fast-track review and approval of new uses as they are introduced. The success of this program in accelerating the introduction of new products with highly favorable characteristics into the marketplace serves as an attractive model for other national regulatory authorities to consider.

This paper will describe the history and practices of the U.S. EPA reduced risk program. Several case studies will be described in order to emphasize the innovative aspects of industry research programs designed to discover and develop new, reduced risk active ingredients. An emphasis will be placed on insecticide products in light of the frequency of recent innovations and high degree of success which new products have experienced in the reduced risk program.

References:

[1] Racke, K.D. 2003. Development and Registration of Pesticides with Reduced Risk Characteristics. In: Chemistry of Crop Protection: Progress and Prospects in Science and Regulation Chaperoning mitochondrial biogenesis. (Voss, G and Ramos, G., Eds) pp. 322-333. Wiley-SCH, Weinheim, Germany.

Table 1. New Insecticides Registered as Reduced Risk Products by U.S. EPA since 1994

<i>Year</i>	<i>Product</i>	<i>Registrant</i>	<i>First Registered Uses</i>
1994	Hexaflumuron	Dow AgroSciences	Termite control
1995	Tebufenozide	Rohm and Haas	Walnuts
1997	Spinosad	Dow AgroSciences	Cotton, turfgrass
1999	Bifenazate	Uniroyal	Ornamentals
1999	Pymetrozine	Novartis	Potatoes, tobacco, ornamentals
2000	Methoxyfenozide	Rohm and Haas	Cotton, pome fruit
2000	Indoxacarb	DuPont	Vegetables, pome fruit, sweet corn
2000	Fenpyroximate	Nihon Nohyaku	Ornamentals
2000	Buprofezin	AgrEvo	Vegetables
2001	Novaluron	Maktheshim-Agan	Ornamentals
2002	Acetamiprid	Aventis	Vegetables, pome fruit, citrus, grapes, cotton, ornamentals
2003	Noviflumuron	Dow AgroSciences	Termite control
2003	Acenocyl	Arvesta	Ornamentals
2004	Lufenuron	Syngenta	Termite control
2004	Dinotefuran	Mitsui	Vegetables, ornamentals, turf
2007	Spinetoram	Dow AgroSciences	Vegetables, pome fruit, citrus, grapes, stone fruit, tree nuts, cotton, potato, ornamentals
2008	Chlorantraniliprole	DuPont	Vegetables, pome fruit, grapes, stone fruit, cotton, potato, ornamentals, turf
2008	Spirotetramat	Bayer	Vegetables, pome fruit, citrus, grapes, stone fruit, tree nuts, potato