Agriculture & Pesticides Facts

ASSESSING THE ENVIRONMENTAL RISKS OF PESTICIDES IN CANADA

The Pest Management Regulatory Agency (PMRA) of Health Canada has the mandate "to protect human health and safety and the environment by minimizing risks associated with pesticides while providing Canadians access to the pest management tools and strategies they require."

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Before a pesticide can be sold or used in Canada, it must be approved and registered by PMRA. The Environmental Risk Assessment is one of the key assessments undertaken by scientists at PMRA when evaluating the acceptability of a pesticide for use in Canada. The information required for this review is obtained from a combination of laboratory studies and field studies. Although Canadian data requirements have been harmonized with those of the United States, field studies must still be conducted within the regions of Canada where the product is intended to be used. This requirement ensures that the data accurately reflect the behaviour of the pesticide under Canadian environmental conditions. Both the pesticide itself and the products of its breakdown are considered in these evaluations.

THE RISK OF A PESTICIDE CAUSING DAMAGE TO THE ENVIRONMENT DEPENDS ON ITS:

- environmental fate - what happens to it in the environment and to what extent non-target species may be exposed to it
- environmental toxicity - its potential to adversely affect non-target species.

Environmental fate studies of a pesticide make it possible to predict its behaviour in soil, water and air, the potential for uptake by plants and animals, and the potential for bio-accumulation. The factors considered during this assessment include:

- expected use patterns - How the product is to be used, including the rate, method and timing of application(s); the target pests; the crop(s) to which it will be applied; and the regions of the country where it will be used.
- physical and chemical properties - These provide an indication of the solubility of the pesticide in water, and hence of its mobility, the potential for volatilization into the air, and the potential for bio-accumulation.
- transformations - Pesticides can be transformed or broken down by light, chemical reactions and/or biological reactions. Knowledge of these transformations provides an indication of how long the pesticide is likely to persist in the environment under various conditions.
- mobility - Mobility studies indicate the risk of the pesticide contaminating either surface waters or groundwater, through runoff, soil erosion or leaching.

Environmental toxicology studies provide information on the hazards that a pesticide, and its breakdown products, pose to non-target plants and animals, either on land or in the water. Specific animal studies provide data related to the effects on birds, mammals, fish, earthworms, beneficial insects and important aquatic invertebrate species. Studies on birds, mammals and fish indicate the acute toxicity and long-term toxicity of the pesticide and its potential to cause birth defects, genetic mutations or other reproductive problems.

RISK ASSESSMENTS

By combining the results of the fate and toxicology studies, scientists at PMRA are able to determine the likelihood of the pesticide being present in the environment in concentrations sufficient to cause adverse effects. The pesticide will be approved for use only if the risks associated with it are acceptable and manageable and if it is of potential value to Canadians.

INTERNET RESOURCES:

The Regulation of Pesticides in Canada
(Pest Management Regulatory Agency)
http://www.hc-sc.gc.ca/pmra-arla/english/pdf/fact/fs_pestreg-e.pdf

Overview of the Pest Management Regulatory Agency
http://www.hc-sc.gc.ca/pmra-arla/english/pdf/pmra/pmra_overview-e.pdf