

## **IMAZAPYR FACTSHEET**

The active ingredient, imazapyr, is marketed in compounds by the trade names, Chopper, Arsenal, and Assault. Imazapyr is a non-selective broad-spectrum systemic herbicide, absorbed by the foliage & roots, with rapid transfer to the xylem & phloem to the meristematic regions, where it accumulates and causes disruption of protein synthesis. This leads to interference in DNA synthesis and cell growth of the plants. The result of exposure is death of new leaves.<sup>1</sup> It was first registered in the United States in 1984.

**Toxicity to Humans:** The primary route of potential harm would occur during the application process. If contact occurs, imazapyr is irritating to the eyes and can cause rashes, redness and swelling at the site of exposure. The amount of the product needed to produce an acute effect is relatively large ( $LD_{50} = >5000$  mg/kg &  $LC_{50} = <100$ ). Imazapyr is not a carcinogen and has no known reproductive effects.

### **Risks to the Environment**

Imazapyr by its nature does not distinguish between the plants it kills. Thus, rare and endangered plants are particularly at risk from exposure to the herbicide. The EPA has stated that “jeopardy” will occur to terrestrial and aquatic plant species from the use of Arsenal.<sup>2</sup>

In soils, imazapyr is persistent. The EPA reports that the half-life of imazapyr is 17 months.<sup>3</sup> If applied to soil, imazapyr is expected to have very high mobility and thus is likely to contaminate water. Studies have detected imazapyr in surface as well as groundwater. If released into water or if the chemical moves through soils and finds its way to water, imazapyr is not expected to adsorb to suspended solids and sediment based upon the adsorption coefficient. Studies on the effects of imazapyr to macroinvertebrate communities did not yield effects.<sup>4</sup> This chemical is not expected to have impacts to salmon species.

### **Breakdown Products**

One primary breakdown product of Imazapyr is quinolinic acid which is irritating to the eyes, respiratory system, and skin. It is also a neurotoxin and can cause symptoms similar to those in Huntington’s chorea such as loss of coordination and trembling.

### **Physicochemical Properties**

$\text{Log } K_{ow} = .22$

$K_{oc} = 8.81$

$LD_{50} = >5000$  mg/kg

$LC_{50} = <100$

Water solubility= 11,300

Half Life = **69-125 days**

**\*Bold indicates toxicity endpoints considered “unacceptable” by the Forest Stewardship Council.<sup>5</sup> The chemical may be prohibited in sustainable forestry operations.**

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<sup>1</sup> Tomlin, C.D.S. (ed.). The Pesticide Manual - World Compendium. 10th ed. Surrey, UK: The British Crop Protection Council, 1994. 584

<sup>2</sup> USEPA. Office of Pesticide Programs. 1987. EEB Review of 241-EEO. Washington, DC (April 21 & June 1).

<sup>3</sup> USEPA-OPP. 1984. Memo from S. Creeger, Hazard Evaluation Division to R. Taylor, Registration Division.

<sup>4</sup> Fowlkes MD, Michael JL, Crisman TL, Prenger JP. Effects of the herbicide imazapyr on benthic macroinvertebrates in a logged pond cypress dome

<sup>5</sup> Forest Stewardship Council (FSC) Principles and Criteria of Forest Stewardship with respect to chemical pesticides, “promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides”. To comply with these requirements, forest managers shall aim to control diseases, pests or weeds primarily through preventative, non-chemical methods, including integrated pest and vegetation management. They shall minimize, and aim to eventually eliminate, the use of chemical pesticides. They shall demonstrate efforts to achieve this aim as soon as reasonable and feasible, with a clear commitment to avoid the use of chemical pesticides.”