

Effects of Herbicides on Amphibians

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What are herbicides?

Herbicides are chemicals used to kill unwanted plants

Used on small scale operations, but used on a much larger scale agricultural operations



Runoff into water sources causes negative health effects on amphibians

Two major chemical classes of herbicides that affect amphibians

- Amino Acid Inhibitors (Glyphosphates)

- Photosynthesis Inhibitors (Atrazine)

Classification of Herbicides

Contact Herbicides: Only kill parts of the plant that come in contact with the chemicals

Systemic Herbicides: Chemicals are absorbed into the plant through foliage or the root system, then spread throughout the plant.

Selective: Kill only specific weeds and do not harm other plants

Non selective: Kill all plants in the area applied



Atrazine

Most commonly used herbicide in the U.S.
 Causes hermaphroditism in frogs
 Photosynthesis Inhibitor
 Found in ground, surface, and drinking water

Feminization of Male Frogs


<https://www.youtube.com/watch?v=nBbkwiGM7X0>

Atrazine is known to cause male frogs to grow female reproductive organs
 Male frogs that undergo this hermaphroditism can even produce clutches of eggs

Glyphosate

First used in 1974
 One of the most used herbicides in the United States
 750 products for sale in U.S. containing glyphosate
 Roundup
 Binds tightly with soil

Evidence



Rick A. Relyea

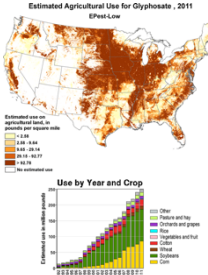
Created a pond habitat which had three different soil types, and contained three different North American Tadpole species

Roundup

3 weeks later

96-100% aquatic larva killed

Also experimented with roundup on Juveniles



Estimated Agricultural Use for Glyphosate, 2011
EPA-LoW

Use by Year and Crop

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