

## Glyphosate Patents

1. **Chelating Agent.** U.S. patent number [3160632 A](#), filed: January 30, 1961; awarded: December 8, 1964.

Inventors: Toy Arthur Dock Fon, Eugene H Uhing; Stauffer Chemical Co

Title: Aminomethylenephosphinic acids, salts thereof, and process for their production.

Glyphosate is a chelating agent, wetting agent, biologically active compound and chemical intermediate for the production of aminomethylenephosphonic acids and derivatives thereof. Due to its strong metal chelating properties, glyphosate was initially used as a descaling agent to clean out calcium and other mineral deposits in pipes and boilers of residential and commercial hot water systems. Descaling agents are effective metal binders, which grab on to Calcium, Magnesium and heavy metals to make the metal water soluble and easily removable. Later, Monsanto acquired the chemical and obtained a patent for its herbicidal properties. Once glyphosate is combined with a metal, it does not follow the normal degradation pathway and remains in the environment or biological systems for a long time. Glyphosate alone is a weak nephrotoxic substance. When it combines with arsenic or heavy metal, its nephrotoxic property is enhanced a thousand times.

2. **Herbicide.** U.S. patent number [3455675 A](#), filed: June 25, 1968; awarded: July 15, 1969.

Inventors: Riyad Rida Irani, Mondanto Co.

Title: Aminophosphonate herbicides

This invention relates to a novel procedure for inhibiting the growth of unwanted plants. The invention is particularly directed to the use of a class of compounds which have selective phytotoxicity on grasses and other noxious weeds. The procedure is particularly effective in destroying established weeds. It has been found that a class of compounds not previously known to possess phytotoxic properties are particularly useful as selective toxicants when applied to leaves, stems, roots and other parts of living plants.

3. **Anti-microbial.** U.S. patent number [20040077608 A1](#), filed: August 29, 2003; awarded: April 22, 2004.

Inventors: William Abraham, Monsanto Technology Lic.

Title: Glyphosate formulations and their use for the inhibition of 5-enolpyruvylshikimate-3-phosphate synthase.

Protozoan parasites of the phylum Apicomplexa include some of the most important causative agents of human and animal diseases, in particular, malaria. The discovery that an organelle found inside parasites of this phylum probably stems from a plastid of plant origin has stimulated research on the effect of chemical herbicidal agents on Apicomplexa. Importantly, the growth of these parasites can be inhibited by the herbicide glyphosate, suggesting that the shikimate pathway will make a good target for the development of new anti-parasite agents. The present invention discloses the use of the herbicidal agent glyphosate in combination with the polyvalent anion oxalic acid for the prevention and therapy of these pathogenic infections.

Claim 1. A process of treating an animal subject for a pathogenic infection, Wherein the infection is by a pathogen containing the enzyme 5-enolpyruvylshikimate-3-phosphate synthase, said enzyme being susceptible to inhibition of its enzymatic activity by the herbicidal agent glyphosate, the process comprising administering to said animal subject a therapeutically or prophylactically effective amount of a glyphosate source and a dicarboxylic acid source.

Claim 2. The process of claim 1 Wherein the dicarboxylic acid is oxalic acid or a salt thereof.

It includes use in animals and humans by injection, orally, anally, intravenously, intramuscular, subcutaneous etc.

Classifications:

U.S. Classification 514/114, 514/574

International Classification A61K31/19, A61K31/66

Cooperative Classification A61K31/19, A61K31/66

European Classification A61K31/66, A61K31/19

4. **Biocide.** U.S. patent number 7771736 B2 filed: August 29, 2003; awarded: August 10, 2010.

Same as #3 with additional classifications (biocide class 424/405; international: A01N37/00):

U.S. Classification 424/405, 504/206, 514/563, 514/574

International Classification A01N37/00, A61K31/19, A01N57/18, A01N57/02, A01N37/12, A01N35/08, A61K31/66, A01N37/44, A01N25/00

Cooperative Classification A61K31/19, A61K31/66

European Classification A61K31/19, A61K31/66

**Biocide:** Any substance or mixture of substances intended for preventing, destroying, or mitigating any living organism (e.g., plant, animal). Examples of a biocide are: acaricide, arthropodicide, fungicide, insecticide, molluscicide, rodenticide.