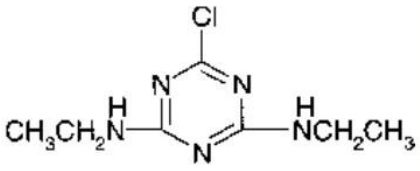
I. TRIAZINE HERBICIDES

The triazine herbicides inhibit plant growth, but this is considered to be a secondary effect caused by an inhibition of photosynthesis.

Simazine

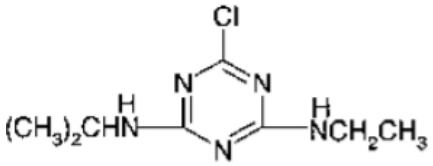
(1-chloro-3,5-bis(ethylamino)- 2,4,6-triazine) is a white crystalline solid with a vapor pressure of 6.1× 10 –9 mm Hg at 20°C, a low water solubility of 3500 mg/l (ppm) at 20°C, a soil half-life of 60 days, and an oral LD (rat) >5000 mg/kg. Simazine is subject to UV (ultraviolet) photodecomposition.



Simazine

Atrazine

(1-Chloro-3-ethylamino-5-isopropylamino-2,4,6-triazine) is a white crystalline solid with a vapor pressure of 2.9 × 10–7mm Hg at 25°C, a moderate water solubility of 33 mg/l (ppm) at 22°C, a soil half-life of 60 days, and an oral LD50 (rat) of 3090 mg/kg. Atrazine is subject to UV photodecomposition.



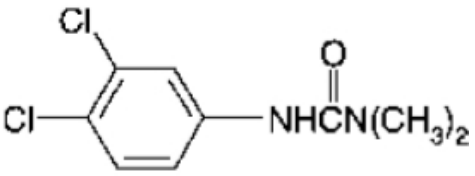
Atrazine

II. UREA HERBICIDES

Phytotoxic symptoms of urea-type herbicides can be largely seen in the leaves. They are readily absorbed by roots and translocated by the xylem throughout the plant.

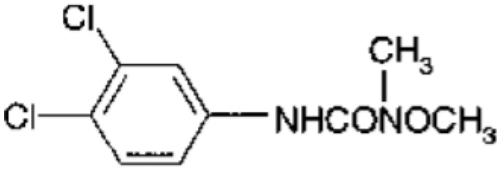
Diuron

(3,4-dichlorophenyl)-*1,1*-dimethylurea is a white crystalline solid with a moderate water solubility of 42 mg/l (ppm) at 25°C, a soil half-life of 90 days, and an oral LD50 (rat) of 3400 mg/kg.



Linuron

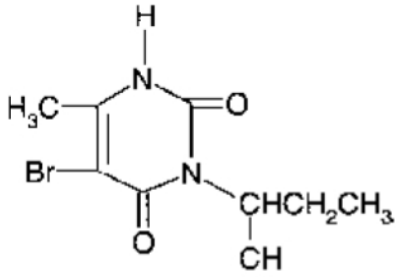
Linuron (N′-(3,4-dichlorophenyl)-N-methoxy-N-methylurea) is a white crystalline solid with a water solubility of 75 mg/l (ppm) at 25°C, a soil half-life of 60 days, and an oral LD50 (rat) of 1254 mg/kg.



III. URACIL HERBICIDES:- Photosynthesis inhibitors

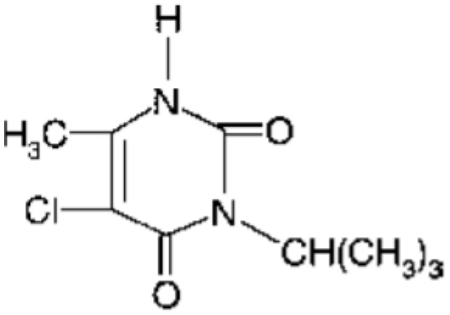
Bromacil

Bromacil (5-bromo-6-methyl-3-(1-methylpropyl)-2,4(1H,3H)pyrimidinedione) is a white crystalline solid with a moderate water solubility of 815 mg/l (ppm) at 25°C, a soil half-life of 60 days, and an oral LD50 (rat) of 5175 mg/kg.



Terbacil

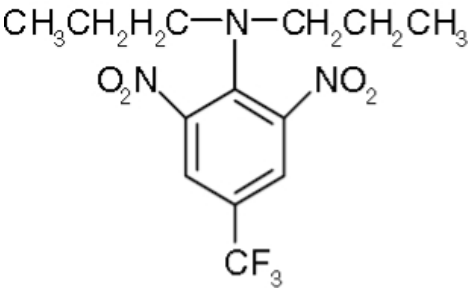
Terbacil (5-chloro-3-(1,1-dimethylethyl)-6-methyl-2,4-(1*H*,3*H*)-pyrimidinedione) is a white crystalline solid a moderate water solubility of 710 mg/l (ppm) at 25°C, a soil half-life of 120 days, and an oral LD50 (rat) of 1255 mg/kg.



IV. Dinitroaniline Herbicides (cell growth disruptors)

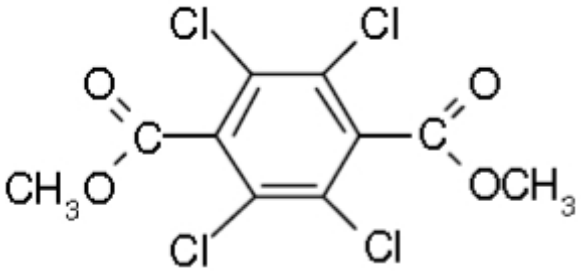
Most used herbicides in agriculture, used as selective soil incorporated herbicides, pre-emergence. There mode of action is cell growth disrupters and inhibitors.

Trifluralin



Trifluralin (2,6-dinitro-*N*,*N*-dipropyl-4-(trifluoromethyl) benzenamine) is an orange crystalline solid with an extremely low water solubility of 0.3 mg/l (ppm) at 25°C, a field soil half-life of 45 days, and an oral LD50 (rat) of >5000 mg/kg.

DCPA



DCPA (dimethyl 2,3,5,6-tetrachloro-1,4-benzenedicarboxylate) is a white crystalline solid with an extremely low water solubility of 0.5 mg/l (ppm) at 25°C, a soil half-life of 60 to 100 days, and an oral LD50 (rat) of >10,000 mg/kg.

V. PHENOXYS (Auxin like herbicides)

Six phenoxy herbicides (2,4-D, MCPA, MCPB, 2,4-DB, dichlorprop, and mecoprop) are currently used in the United States. In addition to the phenoxy "mainframe," all have a chlorine atom on the 4-position of the ring and an aliphatic acid attached to the oxygen atom. The aliphatic acids are acetic, butyric, and proprionic acid.

2,4-D

2,4-D [(2,4-dichlorophenoxy) acetic acid] is a white crystalline solid. The soil half-life is 10 days. The acute oral LD50 (rat) for the acid is 746 mg/kg, and ranges up to > 1000 mg/kg for other formulations.