

chemicalWATCH Factsheet

HYDRAMETHYLNON

Hydramethylnon (Amdro™, Maxforce™, Siege™) is a trifluoromethyl aminohydrazone, a metabolic inhibitor, used mainly in granular baits or ready-to-use gelatin baits to control ants, cockroaches, crickets and termites (U.S. EPA 1998). The chemical is listed in toxicity category III by EPA (on a scale of I to IV, I being the highest toxicity rating), requiring any products to have the signal word CAUTION printed on the label due to eye irritation (EXTOXNET 1996).

Mode of Action

Hydramethylnon works as a metabolic inhibitor by blocking the biological process in the insect that makes Adenosine Triphosphate (ATP). ATP is a compound required by most biological processes to provide energy for life. Without ATP, the target pest becomes lethargic and stops eating. Death usually occurs within 24 to 72 hours, although the speed of the product depends on temperature and target insect activity.

Toxicity

LD₅₀ (lethal dose for 50% of the test population) values have shown hydramethylnon to be slightly toxic through ingestion (1100 to 1300 mg/kg) in rats and through skin exposure (5000 mg/kg) in rabbits. Acute exposure can cause irritation to the eyes and mucous membranes lining the respiratory tract (EXTOXNET 1996).

EPA has classified hydramethylnon as a 'Group C' carcinogen, or possible human carcinogen. Studies in both rats and dogs have shown decreased food consumption, while a 2-year rat study showed increased liver weights and increased liver to body ratios (U.S. EPA 1995). Chronic studies done on hydramethylnon have shown the testis to be a target organ of the pesticide. Mice fed doses of approximately 3.8 mg/kg/day for 18 months developed testicular lesions, while studies in both rats and dogs have resulted in testicular atrophy. In a study of potential birth defects in rabbits, doses of 10 mg/kg/day

resulted in reduced fetal weights.

Ecological Effects

Hydramethylnon is highly toxic to fish in laboratory settings. The 96 hour LC₅₀ (lethal concentration to 50% of the test population) is 0.16 mg/L in rainbow trout, 0.10 mg/L in channel catfish and 1.70 mg/L in the bluegill sunfish (Kidd 1991). Low to moderate capacity to accumulate in biological tissue was demonstrated when hydramethylnon accumulated in bluegill sunfish at 1300 times its concentration in surrounding waters (ETN 1996).

Environmental Fate

Soil half-life for hydramethylnon is estimated at around ten days. Breakdown seems to be enhanced by light and soil organisms. Its low solubility in water and strong absorption by soil organic matter give it low mobility through the soil. This also decreases its likelihood to contaminate groundwater. The reported half-life for hydramethylnon in water is 10 to 11 days over a pH range of 7 to 8.9 and 24 to 33 days at a pH of 4.9 (ETN 1996).

Hydramethylnon *chemicalWATCH* Factsheet Bibliography

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