

AQUATIC LIFE BENCHMARKS



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- Aquatic Life Benchmarks are a compendium of aquatic animal and plant toxicity values used in estimating risk to aquatic organisms from exposure to pesticides in EPA's most recent ecological risk assessments. Benchmarks have also been developed for specific pesticide degradates.
- Values are extracted from ecological risk assessments written by EFED in support of the registration or registration review of pesticides.
- Toxicity values are adjusted to respective benchmark by multiplying the toxicity value by its regulatory LOC:
 - Aquatic animal acute toxicity value is multiplied by the acute risk LOC of 0.5;
 - Since chronic risk LOCs for aquatic animals and the LOC for risk to aquatic vascular and non-vascular plants are 1.0, no adjustment is needed.
- Toxicity categories included in the benchmarks are:
 - freshwater fish acute & chronic toxicity;
 - freshwater invertebrate acute & chronic toxicity; and,
 - vascular & non-vascular aquatic plant toxicity.
- The benchmarks (759) are used by state water management agencies and international regulatory authorities as well as researchers both domestically and internationally.



OPP AQUATIC LIFE BENCHMARKS TABLE

New/updated benchmarks are highlighted in red

▲ Pesticide	Year Updated	CAS number	Fish		Invertebrates		Nonvascular Plants	Vascular Plants	Office of Water Aquatic Life Criteria	
			Acute ¹	Chronic ²	Acute ³	Chronic ⁴	Acute ⁵	Acute ⁶	Acute	Chronic
1,2-Benzisothiazol-3(2H)-one, 2-butyl (BBIT)	2021	4299-07-4	270	280	750	910	19	930 ⁸		
1,2-benzisothiazolin-3-one (BIT)	2021	2634-33-5	270	280	750	910	19	930 ⁸		
1-Naphthalene acetic acid (NAA)	2021	86-87-3	14000	1200	90000	11000	6100	4200		
1-Naphthalene acetic acid ammonium salt	2021	25545-89-5	14000	1200	90000	11000	6100	4200		
1-Naphthalene acetic acid potassium salt	2021	15165-79-4	14000	1200	90000	11000	6100	4200		
1-Naphthaleneacetamide (NAD)	2021	86-86-2	14000	1200	90000	11000	6100	4200		
1-Naphthaleneacetic Acid Ethyl Ester (NAA Ester)	2021	2122-70-5	14000	1200	90000	11000	6100	4200		

<https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>



2022 NEW AQUATIC BENCHMARKS

- Benzyl Benzoate (and Benzyl Benzoate degradates “Benzoic Acid” and “Sodium Benzoate”);
- Buprofezin;
- Butoxypolypropylene glycol;
- Copper 8 Quinolinolate;
- TCMTB (and TCMTB degradate “2-MBT”);
- 1,3 PAD;
- Ipflufenquin;
- Cyflufenamid (and Cyflufenamid degradates “149-F”, “149-F1”, “149-F6”, and “149-F11”);
- Ferbam;
- Fluopyram;
- Oxycarboxin;
- Fenazaquin (and Fenazaquin degradates “2-(4-Tert-Butylphenyl) Ethanol”, and “Fenazaquin propionic acid”);
- Flumetralin; Magnesium Chloride;
- Metrafenone (and Metrafenone degradates “CL 375816”, and “CL 4084564”);
- MGK-264; and,
- Triticonazole



2022 UPDATED AQUATIC BENCHMARKS

- Acequinocyl;
- Acetochlor (and Acetochlor degradate "Ethanesulfonic acid (ESA)");
- Aminocyclopyrachlor acid; Aminocyclopyrachlor ester;
- Aminopyralid;
- Carbaryl;
- Carboxin (and Carboxin degradate "Carboxin sulfoxide");
- Chlorflurenol Methyl Ester (CME);
- Chlormequat chloride;
- Chlorpyrifos;
- Clopyralid;
- Coumaphos;
- Cyclaniliprole (and Cyclaniliprole degradates "NK-1375", "NU-356", and "TJ-537");
- Difenconazole;
- Diothiopyr;
- Dodine;
- Etridiazole (and Etridiazole degradate "3-DCMT");
- Fenamidone (and Fenamidone degradates "RPA-410193", "RPA-412636", "RPA-412708", and "RPA-413255");
- Fenbuconazole;
- Fenpyroximate (and Fenpyroximate degradate "M-3 ((E)-4-[(1,3-dimethyl-5-phenoxy-pyrazol-4-yl)methylene-aminoxy-methyl]-benzoic acid");
- Flonicamid; Flumioxazin (and Flumioxazin degradates "482-HA"*, "APF"*, "THPA-2Na"*);
- Fluensulfone;
- Formetanate HCl;
- Ionicamid;
- Mandipropamid (and Mandipropamid degradate "CGA 380778"*);
- MCPB (and MCPB degradate "MCPB sodium salt");
- Metam sodium and Metam potassium degradate "Methyl isothiocyanate (MITC)";
- Metolachlor (and Metolachlor degradates "Metolachlor ethane sulfonic acid", and "Metolachlor oxanilic acid"); S-Metolachlor;
- Myclobutanil (and Myclobutanil degradates "1,2,4-triazole"*, and "1,2,4-triazole acetic acid"*);
- Nabam (and Nabam degradates "ethylene thiourea (ETU)" and "ethylene urea (EU)"*); F
- Oxyfluorfen;
- Paraquat Dichloride;
- Piperonyl Butoxide;
- Prometon;
- Propanil (and Propanil degradate "3,4-Dichloroaniline (3,4-DCA)*");
- Propazine;
- Propylene Oxide;
- Pyrasulfotole;
- Pyroxasulfone;
- Rotenone;
- Sodium Chlorate;
- Sodium cyanide;
- Sodium fluoroacetate;
- Sodium Metabisulfite;
- Spirodiclofen (and Spirodiclofen degradate "BAJ 2740-enol"*);
- Sulfur Dioxide;
- Tebuconazole;
- Terbacil;
- Thiram;
- Topramezone;
- Triallate;
- Triclopyr Acid; Triclopyr Butoxyethyl Ester (BEE); Triclopyr degradate TCP; Triclopyr Triethylamine salt (TEA); Triphenyltin Hydroxide (TPTH).

USE OF AQUATIC LIFE BENCHMARKS

- Aquatic life benchmarks are estimates of the concentrations below which pesticides are not expected to represent a risk of concern for aquatic life.
- Comparing a measured concentration of a pesticide in water with an aquatic life benchmark can be helpful in interpreting monitoring data and in identifying and prioritizing sites and pesticides that may require further investigation.

RELATIONSHIP WITH AQUATIC LIFE CRITERIA

Both Office of Pesticide Programs and Office of Water (OW) evaluate aquatic toxicity data to assess ecological effects of chemicals in surface water. These assessments are developed with high quality data following peer-reviewed assessment methods.

OW uses aquatic toxicity data to develop ambient water quality criteria that can be adopted by states and tribes to establish water quality standards under the Clean Water Act. State and tribal governments may use these criteria or use them as guidance in developing their own.

Aquatic life criteria for toxic chemicals are the highest concentration of specific pollutants or parameters in water that are not expected to pose a significant risk to the majority of species in a given environment (<https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>).

For some pesticides for which OW has developed acute and chronic criteria, these values are listed on the OPP Benchmarks website.

Thank you!

Questions?

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