Supporting information Data 5

of thesis entitled

**Improving practicality and reliability of the ecological risk assessment of emerging contaminants: development of an integrated framework**

Submitted by

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[Table S1 Chronic toxicity data of PFOS 2](#_Toc122252450)

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Table S Chronic toxicity data of PFOS

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species Scientific Name | Species Common Name | Species Phylum | Species Family | Species Group | Organism Lifestage | Exposure Type | Observed Duration (Days) | Endpoint | Concentration (mg/L) | Effect | Effect Measurement | Response Site | Chemical Analysis | Klimisch Code | Reference |
| Chlorella pyrenoidosa | Green Algae | Chlorophyta | Oocystaceae | Algae | Exponential growth phase (log) | Static | 4 | NOEC | 80 | Population | Population growth rate | / | Unmeasured | 2 | (Zhang et al., 2012) |
| Chlorella vulgaris | Green Algae | Chlorophyta | Oocystaceae | Algae | / | Static | 4 | NOEC | 8.2 | Population | Abundance | / | Unmeasured | 2 | (Boudreau et al., 2003) |
| Navicula pelliculosa | Diatom | Bacillariophyta | Naviculaceae | Algae | Exponential growth phase (log) | Static | 4 | NOEC | 150 | Population | Abundance | / | Measured | 1 | (Sutherland and Krueger, 2001) |
| Scenedesmus acutus | Green Algae | Chlorophyta | Scenedesmaceae | Algae | Exponential growth phase (log) | Static | 4 | NOEC | 25 | Population | Population growth rate | / | Unmeasured | 2 | (Zhang et al., 2012) |
| Selenastrum capricornutum | Green Algae | Chlorophyta | Selenastraceae | Algae | / | Static | 4 | NOEC | 5.3 | Population | Abundance | / | Unmeasured | 2 | (Boudreau et al., 2003) |
| Cyclops sp. | Cyclopoid Copepod | Arthropoda | Cyclopidae | Crustaceans | / | Static | 7 | NOEC | 30 | Population | Abundance | / | Unmeasured | 2 | (Sanderson et al., 2002) |
| Daphnia carinata | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 0.001 | Reproduction | Time to first progeny | / | Unmeasured | 2 | (Logeshwaran et al., 2021) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 0.669 | Growth | Length | Whole organism | Unmeasured | 2 | (Yang et al., 2019) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | Juvenile | Renewal | 21 | NOEC | 1 | Reproduction | Progeny counts/numbers | / | Unmeasured | 2 | (Li, 2010) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 4 | Enzyme(s) | Glutathione S-transferase | / | Unmeasured | 2 | (Liang et al., 2017) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 4 | Population | Intrinsic rate of increase | / | Unmeasured | 2 | (Liang et al., 2017) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | / | Renewal | 21 | EC10 | 4.17 | Mortality | Lifespan | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Daphnia pulicaria | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 6 | Intoxication | Immobile | / | Unmeasured | 2 | (Sanderson et al., 2004) |
| Moina macrocopa | Water Flea | Arthropoda | Moinidae | Crustaceans | Neonate | Renewal | 7 | NOEC | 0.313 | Reproduction | Progeny counts/numbers | / | Unmeasured | 2 | (Ji et al., 2008) |
| Moina macrocopa | Water Flea | Arthropoda | Moinidae | Crustaceans | Neonate | Renewal | 7 | NOEC | 1.25 | Mortality | Survival | / | Unmeasured | 2 | (Ji et al., 2008) |
| Moina macrocopa | Water Flea | Arthropoda | Moinidae | Crustaceans | Neonate | Renewal | 7 | NOEC | 5 | Population | Population growth rate | / | Unmeasured | 2 | (Ji et al., 2008) |
| Monoporeia affinis | Baltic Amphipod | Arthropoda | Pontoporeiidae | Crustaceans | Adult | Static | 35 | LOEC/2 | 0.005 | Mortality | Survival | / | Unmeasured | 2 | (Jacobson et al., 2010) |
| Monoporeia affinis | Baltic Amphipod | Arthropoda | Pontoporeiidae | Crustaceans | Adult | Renewal | 21 | NOEC | 0.0072 | Development | Sexual development | / | Unmeasured | 2 | (Jacobson et al., 2010) |
| Monoporeia affinis | Baltic Amphipod | Arthropoda | Pontoporeiidae | Crustaceans | Adult | Renewal | 21 | NOEC | 0.0203 | Growth | Weight | Whole organism | Unmeasured | 2 | (Jacobson et al., 2010) |
| Neocaridina denticulata | Shrimp | Arthropoda | Atyidae | Crustaceans | / | Aquatic - not reported | 4 | NOEC | 5 | Mortality | Mortality | / | Unmeasured | 2 | (Li, 2009) |
| Chironomus riparius | Midge | Arthropoda | Chironomidae | Insects | Larva | Static | 10 | NOEC | 0.0035 | Reproduction | Progeny counts/numbers | / | Measured | 1 | (Stefani et al., 2014) |
| Chironomus tentans | Midge | Arthropoda | Chironomidae | Insects | Larva | Renewal | 20 | NOEC | 0.0217 | Growth | Dry weight (AQUIRE only) | / | Measured | 1 | (MacDonald et al., 2004) |
| Chironomus tentans | Midge | Arthropoda | Chironomidae | Insects | Larva | Renewal | 10 | NOEC | 0.0491 | Mortality | Survival | / | Measured | 1 | (MacDonald et al., 2004) |
| Dugesia japonica | Flatworm | Platyhelminthes | Planariidae | Worms | / | Aquatic - not reported | 4 | NOEC | 10 | Mortality | Mortality | / | Unmeasured | 2 | (Li, 2009) |
| Lampsilis siliquoidea | Lamp-Mussel | Mollusca | Unionidae | Molluscs | Glochidia | Static | 44 | NOEC | 0.00452 | Development (Delayed) | Metamorphosis | / | Measured | 1 | (Hazelton et al., 2012) |
| Lampsilis siliquoidea | Lamp-Mussel | Mollusca | Unionidae | Molluscs | Adult | Renewal | 36 | NOEC | 0.0695 | Reproduction | Viability | / | Measured | 1 | (Hazelton et al., 2012) |
| Bufo gargarizans | Asiatic Toad | Chordata | Bufonidae | Amphibians | Tadpole | Renewal | 30 | EC10 | 2 | Mortality | Lifespan | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Bufo gargarizans | Asiatic Toad | Chordata | Bufonidae | Amphibians | Tadpole | Renewal | 30 | NOEC | 5.57 | Growth | Weight | Whole organism | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Lithobates pipiens | Leopard Frog | Chordata | Ranidae | Amphibians | Embryo | Flow-through | 60 | NOEC | 0.97 | Development | Metamorphosis | / | Measured | 1 | (Ankley et al., 2004) |
| Rana catesbeiana | Bullfrog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 72 | LOEC/2 | 0.072 | Development | Stage | / | Unmeasured | 2 | (Flynn et al., 2019) |
| Rana catesbeiana | Bullfrog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 21 | NOEC | 0.288 | Growth | Weight | Whole organism | Unmeasured | 2 | (Flynn et al., 2019) |
| Rana catesbeiana | Bullfrog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 72 | NOEC | 0.288 | Mortality | Mortality | / | Unmeasured | 2 | (Flynn et al., 2019) |
| Xenopus laevis | African Clawed Frog | Chordata | Pipidae | Amphibians | Tadpole | Renewal | 67 | NOEC | 0.1 | Development | Organ/tissue formation | Forelimb | Unmeasured | 2 | (Cheng et al., 2011) |
| Xenopus laevis | African Clawed Frog | Chordata | Pipidae | Amphibians | Tadpole | Renewal | 67 | NOEC | 0.1 | Mortality | Survival | / | Unmeasured | 2 | (Cheng et al., 2011) |
| Xenopus laevis | African Clawed Frog | Chordata | Pipidae | Amphibians | Gastrula | Renewal | 8 | LOEC/2 | 0.25 | Genetics (Delayed) | Heat shock protien 47 mRNA | Whole organism | Chemical analysis reported | 1 | (San-Segundo et al., 2016) |
| Xenopus laevis | African Clawed Frog | Chordata | Pipidae | Amphibians | Gastrula | Renewal | 8 | NOEC | 24 | Growth (Delayed) | Length | Whole organism | Chemical analysis reported | 1 | (San-Segundo et al., 2016) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 0.12 | Enzyme(s) | Aromatase | Gonad(s) | Measured | 1 | (Fort et al., 2019a) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 0.12 | Hormone(s) | Testosterone | Gonad(s) | Measured | 1 | (Fort et al., 2019a) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 0.29 | Hormone(s) | 17-beta Estradiol | Plasma | Measured | 1 | (Fort et al., 2019a) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 0.29 | Reproduction | Germ cell count | Ovaries | Measured | 1 | (Fort et al., 2019b) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 0.62 | Population | Sex ratio | / | Measured | 1 | (Fort et al., 2019b) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 1.1 | Development | Sexual development | / | Measured | 1 | (Fort et al., 2019b) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 1.1 | Growth | Weight | Whole organism | Measured | 1 | (Fort et al., 2019b) |
| Xenopus tropicalis | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Flow-through | 150 | NOEC | 1.1 | Mortality | Mortality | / | Measured | 1 | (Fort et al., 2019b) |
| Anguilla anguilla | Common Eel | Chordata | Anguillidae | Fish | / | Renewal | 28 | NOEC | 0.011 | Growth | Weight | Whole organism | Measured | 1 | (Roland et al., 2014) |
| Ctenopharyngodon idella | Grass Carp | Chordata | Cyprinidae | Fish | / | Renewal | 58 | NOEC | 0.0004 | Growth | Weight | Whole organism | Measured | 1 | (Qiang et al., 2016) |
| Ctenopharyngodon idella | Grass Carp | Chordata | Cyprinidae | Fish | / | Renewal | 58 | NOEC | 0.0004 | Mortality | Mortality | / | Measured | 1 | (Qiang et al., 2016) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Flow-through | 316 | NOEC | 0.000734 | Growth | Weight | Whole organism | Measured | 1 | (Keiter et al., 2012) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Fry | Renewal | 70 | NOEC | 0.01 | Morphology | Organ weight in relationship to body weight | Gonad(s) | Unmeasured | 2 | (Du et al., 2009) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Fry | Renewal | 40 | NOEC | 0.05 | Genetics | Vitellogenin mRNA | Liver | Unmeasured | 2 | (Du et al., 2009) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Flow-through | 316 | NOEC | 0.1069 | Reproduction | Progeny counts/numbers | Egg | Measured | 1 | (Keiter et al., 2012) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Renewal | 120 | NOEC | 0.2 | Hormone(s) | 17-beta Estradiol | Whole organism | Unmeasured | 2 | (Du et al., 2018) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Renewal | 120 | NOEC | 0.2 | Hormone(s) | Testosterone | Whole organism | Unmeasured | 2 | (Du et al., 2018) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Flow-through | 180 | NOEC | 0.268 | Biochemistry | Vitellogenin | Whole organism | Measured | 1 | (Keiter et al., 2012) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Flow-through | 180 | NOEC | 0.268 | Mortality | Mortality | / | Measured | 1 | (Keiter et al., 2012) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 100 | LOEC/2 | 0.005 | Growth | Weight | Whole organism | Unmeasured | 2 | (Ji et al., 2008) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 100 | NOEC | 0.01 | Morphology | Organ weight in relationship to body weight | Gonad(s) | Unmeasured | 2 | (Ji et al., 2008) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 21 | LOEC/2 | 0.5 | Biochemistry | Vitellogenin | Liver | Unmeasured | 2 | (Kang et al., 2019) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 21 | LOEC/2 | 0.5 | Reproduction | Progeny counts/numbers | / | Unmeasured | 2 | (Kang et al., 2019) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 21 | NOEC | 1 | Genetics | Vitellogenin 1 mRNA | Liver | Unmeasured | 2 | (Kang et al., 2019) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 28 | NOEC | 1 | Mortality | Survival | / | Unmeasured | 2 | (Ji et al., 2008) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Renewal | 42 | NOEC | 0.044 | Growth | Weight | Whole organism | Measured | 1 | (Suski et al., 2021) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Flow-through | 21 | NOEC | 0.101 | Hormone(s) | Testosterone | Plasma | Measured | 1 | (Ankley et al., 2005) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Renewal | 42 | NOEC | 0.231 | Morphology | Organ weight in relationship to body weight | Ovaries | Measured | 1 | (Suski et al., 2021) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Flow-through | 21 | NOEC | 0.281 | Biochemistry | Vitellogenin | Plasma | Measured | 1 | (Ankley et al., 2005) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Flow-through | 21 | NOEC | 0.281 | Enzyme(s) | Aromatase | Brain | Measured | 1 | (Ankley et al., 2005) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Flow-through | 21 | NOEC | 0.281 | Hormone(s) | 17-beta Estradiol | Plasma | Measured | 1 | (Ankley et al., 2005) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Flow-through | 45 | NOEC | 0.281 | Mortality | Probability of Survival | / | Measured | 1 | (Ankley et al., 2005) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Sexually mature | Flow-through | 45 | NOEC | 0.281 | Reproduction | Hatch | / | Measured | 1 | (Ankley et al., 2005) |
| Pseudorasbora parva | Motsuga, Stone Moroko | Chordata | Cyprinidae | Fish | / | Renewal | 30 | EC10 | 2.12 | Mortality | Lifespan | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Pseudorasbora parva | Motsuga, Stone Moroko | Chordata | Cyprinidae | Fish | / | Renewal | 30 | NOEC | 5.57 | Growth | Weight | Whole organism | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Xiphophorus helleri | Green Swordtail | Chordata | Poeciliidae | Fish | Adult | Renewal | 21 | LOEC/2 | 0.05 | Genetics | Vitellogenin mRNA | Liver | Unmeasured | 2 | (Han and Fang, 2010) |
| Xiphophorus helleri | Green Swordtail | Chordata | Poeciliidae | Fish | Fry | Renewal | 90 | LOEC/2 | 0.05 | Morphology | Organ weight in relationship to body weight | Ovaries | Unmeasured | 2 | (Han and Fang, 2010) |
| Xiphophorus helleri | Green Swordtail | Chordata | Poeciliidae | Fish | Fry | Renewal | 90 | NOEC | 0.1 | Growth | Weight | Whole organism | Unmeasured | 2 | (Han and Fang, 2010) |
| Xiphophorus helleri | Green Swordtail | Chordata | Poeciliidae | Fish | Fry | Renewal | 90 | NOEC | 0.1 | Population | Sex ratio | / | Unmeasured | 2 | (Han and Fang, 2010) |
| Xiphophorus helleri | Green Swordtail | Chordata | Poeciliidae | Fish | Adult | Renewal | 42 | NOEC | 2.5 | Reproduction | Pregnant, Paris or Gravid | / | Unmeasured | 2 | (Han and Fang, 2010) |

Table S Chronic toxicity data of PFOA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Species Scientific Name | Species Common Name | Species Phylum | Species Family | Species Group | Organism Lifestage | Exposure Type | Observed Duration (Days) | Endpoint | Concentration (mg/L) | Effect | Effect Measurement | Response Site | Chemical Analysis | Klimisch Code | Reference |
| Chlamydomonas reinhardtii | Green Algae | Chlorophyta | Chlamydomonadaceae | Algae | Exponential growth phase (log) | Static | 8 | NOEC | 11.23 | Population | Abundance | / | Measured | 1 | (Hu et al., 2014) |
| Chlorella pyrenoidosa | Green Algae | Chlorophyta | Oocystaceae | Algae | Exponential growth phase (log) | Static | 10 | NOEC | 0.73 | Population | Biomass | / | Measured | 1 | (Hu et al., 2020) |
| Raphidocelis subcapitata | Green Algae | Chlorophyta | Selenastraceae | Algae | / | Static | 4 | EC10 | 19.72 | Population | Abundance | / | Unmeasured | 2 | (González-Naranjo and Boltes, 2014) |
| Scenedesmus acutus var. acutus | Green Algae | Chlorophyta | Scenedesmaceae | Algae | Exponential growth phase (log) | Static | 8 | NOEC | 24.97 | Population | Abundance | / | Measured | 1 | (Hu et al., 2014) |
| Selenastrum capricornutum | Green Algae | Chlorophyta | Selenastraceae | Algae | / | Static | 4 | NOEC | 63 | Population | Population changes, general | / | Unmeasured | 2 | (Co., 2000) |
| Cyclops sp. | Cyclopoid Copepod | Arthropoda | Cyclopidae | Crustaceans | / | Static | 7 | NOEC | 30 | Population | Abundance | / | Unmeasured | 2 | (Sanderson et al., 2003) |
| Daphnia carinata | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 0.01 | Reproduction | Progeny counts/numbers | / | Unmeasured | 2 | (Logeshwaran et al., 2021) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | / | Renewal | 21 | EC10 | 7.02 | Reproduction | Mean spawns per female | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | / | Renewal | 21 | EC10 | 11.12 | Mortality | Lifespan | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 15.1 | Growth | Length | Whole organism | Unmeasured | 2 | (Yang et al., 2019) |
| Daphnia magna | Water Flea | Arthropoda | Daphniidae | Crustaceans | Neonate | Renewal | 21 | NOEC | 25 | Growth | Length | Whole organism | Unmeasured | 2 | (Ji et al., 2008) |
| Hyalella azteca | Scud | Arthropoda | Hyalellidae | Crustaceans | Juvenile | Renewal | 42 | EC10 | 0.0265 | Reproduction | Progeny counts/numbers | / | Measured | 1 | (Bartlett et al., 2021) |
| Hyalella azteca | Scud | Arthropoda | Hyalellidae | Crustaceans | Juvenile | Renewal | 42 | NOEC | 0.84 | Development | Slowed, Retarded, Delayed or Non-development | / | Measured | 1 | (Bartlett et al., 2021) |
| Hyalella azteca | Scud | Arthropoda | Hyalellidae | Crustaceans | Juvenile | Renewal | 42 | NOEC | 0.84 | Growth | Weight | Whole organism | Measured | 1 | (Bartlett et al., 2021) |
| Hyalella azteca | Scud | Arthropoda | Hyalellidae | Crustaceans | Juvenile | Renewal | 42 | NOEC | 0.84 | Population | Sex ratio | / | Measured | 1 | (Bartlett et al., 2021) |
| Hyalella azteca | Scud | Arthropoda | Hyalellidae | Crustaceans | Juvenile | Renewal | 42 | NOEC | 8.9 | Mortality | Survival | / | Measured | 1 | (Bartlett et al., 2021) |
| Moina macrocopa | Water Flea | Arthropoda | Moinidae | Crustaceans | Neonate | Renewal | 7 | NOEC | 3.125 | Reproduction | Progeny counts/numbers | / | Unmeasured | 2 | (Ji et al., 2008) |
| Moina macrocopa | Water Flea | Arthropoda | Moinidae | Crustaceans | Neonate | Renewal | 7 | NOEC | 12.5 | Mortality | Survival | / | Unmeasured | 2 | (Ji et al., 2008) |
| Moina macrocopa | Water Flea | Arthropoda | Moinidae | Crustaceans | Neonate | Renewal | 7 | NOEC | 25 | Population | Population growth rate | / | Unmeasured | 2 | (Ji et al., 2008) |
| Chironomus plumosus | Midge | Arthropoda | Chironomidae | Insects | Larva | Static | 10.33 | NOEC | 0.0098 | Mortality | Survival | / | Measured | 1 | (Zhai et al., 2016) |
| Chironomus riparius | Midge | Arthropoda | Chironomidae | Insects | Larva | Static | 9 | NOEC | 0.0089 | Reproduction | Progeny counts/numbers | / | Measured | 1 | (Stefani et al., 2014) |
| Brachionus calyciflorus | Rotifer | Rotifera | Brachionidae | Invertebrates | Neonate | Renewal | 6 | NOEC | 0.125 | Mortality (Delayed) | Hatch | / | Unmeasured | 2 | (Zhang et al., 2014) |
| Brachionus calyciflorus | Rotifer | Rotifera | Brachionidae | Invertebrates | Neonate | Renewal | 4 | NOEC | 4 | Population | Intrinsic rate of increase | / | Unmeasured | 2 | (Zhang et al., 2014) |
| Ambystoma tigrinum | Tiger Salamander | Chordata | Ambystomatidae | Amphibians | Larva | Renewal | 31 | NOEC | 1 | Growth | Weight | Whole organism | Unmeasured | 2 | (Hoover, 2018) |
| Anaxyrus americanus | American Toad | Chordata | Bufonidae | Amphibians | Tadpole | Renewal | 36.7 | NOEC | 1 | Development | Metamorphosis | / | Unmeasured | 2 | (Hoover, 2018) |
| Anaxyrus americanus | American Toad | Chordata | Bufonidae | Amphibians | Tadpole | Renewal | 36.7 | NOEC | 1 | Growth | Weight | Whole organism | Unmeasured | 2 | (Hoover, 2018) |
| Bufo gargarizans | Asiatic Toad | Chordata | Bufonidae | Amphibians | Tadpole | Renewal | 30 | EC10 | 5.89 | Mortality | Lifespan | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Bufo gargarizans | Asiatic Toad | Chordata | Bufonidae | Amphibians | Tadpole | Renewal | 30 | NOEC | 37.97 | Growth | Weight | Whole organism | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Lithobates pipiens | Leopard Frog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 40 | NOEC | 1 | Development | Stage | / | Chemical analysis reported | 1 | (Hoover et al., 2017) |
| Rana catesbeiana | Bullfrog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 70 | NOEC | 0.144 | Growth | Weight | Whole organism | Unmeasured | 2 | (Flynn et al., 2019) |
| Rana catesbeiana | Bullfrog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 72 | NOEC | 0.288 | Development | Stage | / | Unmeasured | 2 | (Flynn et al., 2019) |
| Rana catesbeiana | Bullfrog | Chordata | Ranidae | Amphibians | Tadpole | Renewal | 72 | NOEC | 0.288 | Mortality | Mortality | / | Unmeasured | 2 | (Flynn et al., 2019) |
| Xenopus sp. | Clawed Frog | Chordata | Pipidae | Amphibians | Embryo | Static | 36 | NOEC | 53.8 | Genetics | Glutamate carboxypeptidase-like protein 1 mRNA | Liver | Unmeasured | 2 | (Kim et al., 2013) |
| Cyprinus carpio | Common Carp | Chordata | Cyprinidae | Fish | / | Flow-through | 56 | NOEC | 2 | Growth | Condition index | Whole organism | Chemical analysis reported | 1 | (Giari et al., 2016) |
| Cyprinus carpio | Common Carp | Chordata | Cyprinidae | Fish | / | Flow-through | 56 | NOEC | 2 | Morphology | Organ weight in relationship to body weight | Gonad(s) | Chemical analysis reported | 1 | (Giari et al., 2016) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Renewal | 7 | LOEC/2 | 0.0828 | Biochemistry | Vitellogenin | Whole organism | Unmeasured | 2 | (Xin et al., 2019) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Renewal | 7 | LOEC/2 | 0.0828 | Hormone(s) | 17-beta Estradiol | Whole organism | Unmeasured | 2 | (Xin et al., 2019) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Embryo | Renewal | 7 | LOEC/2 | 0.0828 | Hormone(s) | Testosterone | Whole organism | Unmeasured | 2 | (Xin et al., 2019) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Adult | Renewal | 28 | NOEC | 1 | Reproduction | Fecundity | / | Unmeasured | 2 | (Hagenaars et al., 2013) |
| Danio rerio | Zebra Danio | Chordata | Cyprinidae | Fish | Gastrula | Renewal | 28 | NOEC | 4.7 | Growth | Length | Whole organism | Unmeasured | 2 | (Godfrey et al., 2017) |
| Gobiocypris rarus | Chinese Rare Minnow | Chordata | Cyprinidae | Fish | Mature | Flow-through | 14 | NOEC | 3 | Biochemistry | Vitellogenin | Liver | Unmeasured | 2 | (Benninghoff et al., 2010) |
| Gobiocypris rarus | Chinese Rare Minnow | Chordata | Cyprinidae | Fish | Mature | Flow-through | 14 | NOEC | 3 | Genetics | Vitellogenin mRNA | Liver | Unmeasured | 2 | (Benninghoff et al., 2010) |
| Gobiocypris rarus | Chinese Rare Minnow | Chordata | Cyprinidae | Fish | Mature | Flow-through | 28 | NOEC | 3 | Genetics | Aryl Hydrocarbon Receptor protein mRNA | Gill(s) | Unmeasured | 2 | (Liu et al., 2008) |
| Oreochromis niloticus | Nile Tilapia | Chordata | Cichlidae | Fish | / | / | 31 | LOEC/2 | 15 | Biochemistry | Total antioxidant capacity | Serum | Unmeasured | 2 | (Abdel-Gawad et al., 2016) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 28 | NOEC | 1 | Mortality | Survival | / | Unmeasured | 2 | (Ji et al., 2008) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 266 | NOEC | 3 | Reproduction | Fecundity | / | Chemical analysis reported | 1 | (Lee et al., 2017) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Embryo | Renewal | 10 | LOEC/2 | 2.35 | Genetics | Vitellogenin mRNA | / | Unmeasured | 2 | (Godfrey et al., 2019) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 100 | NOEC | 10 | Growth | Weight | Whole organism | Unmeasured | 2 | (Ji et al., 2008) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 266 | NOEC | 30 | Biochemistry | Vitellogenin | / | Chemical analysis reported | 1 | (Lee et al., 2017) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 266 | NOEC | 30 | Morphology | Organ weight in relationship to body weight | Gonad(s) | Chemical analysis reported | 1 | (Lee et al., 2017) |
| Oryzias latipes | Japanese Medaka | Chordata | Adrianichthyidae | Fish | Adult | Renewal | 266 | NOEC | 30 | Population | Sex ratio | / | Chemical analysis reported | 1 | (Lee et al., 2017) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Embryo | Renewal | 7 | NOEC | 76 | Development | Deformation | / | Measured | 1 | (Bartlett et al., 2021) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Embryo | Renewal | 21 | NOEC | 76 | Growth | Weight | Whole organism | Measured | 1 | (Bartlett et al., 2021) |
| Pimephales promelas | Fathead Minnow | Chordata | Cyprinidae | Fish | Embryo | Renewal | 21 | NOEC | 76 | Mortality | Survival | / | Measured | 1 | (Bartlett et al., 2021) |
| Pseudorasbora parva | Motsuga, Stone Moroko | Chordata | Cyprinidae | Fish | / | Renewal | 30 | EC10 | 11.78 | Mortality | Lifespan | / | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Pseudorasbora parva | Motsuga, Stone Moroko | Chordata | Cyprinidae | Fish | / | Renewal | 30 | NOEC | 75.94 | Growth | Weight | Whole organism | Chemical analysis reported | 1 | (Yang et al., 2014) |
| Salmo salar | Atlantic Salmon | Chordata | Salmonidae | Fish | Egg | Flow-through | 49 | NOEC | 0.1 | Genetics | Estrogen receptor alpha mRNA | Head | Unmeasured | 2 | (Spachmo and Arukwe, 2012) |
| Salmo salar | Atlantic Salmon | Chordata | Salmonidae | Fish | Embryo | Renewal | 49 | NOEC | 0.1 | Growth | Weight | Whole organism | Unmeasured | 2 | (Arukwe et al., 2013) |
| Salmo salar | Atlantic Salmon | Chordata | Salmonidae | Fish | Embryo | Renewal | 49 | LOEC/2 | 0.05 | Hormone(s) | Estrone | Whole organism | Unmeasured | 2 | (Arukwe et al., 2013) |
| Salmo salar | Atlantic Salmon | Chordata | Salmonidae | Fish | Embryo | Renewal | 49 | LOEC/2 | 0.05 | Hormone(s) | Testosterone | Whole organism | Unmeasured | 2 | (Arukwe et al., 2013) |

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