***Supporting information Data 6***

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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|  |  |
| --- | --- |
| Amoxicillin | Trimethoprim |
|  |  |
| Pefloxacin | Sulfamethoxazole |
|  |  |
| Tetracycline |  |
|  | Figure S The visual goodness of fit of species sensitivity distribution (SSD) models of ecotoxicity data based on the log-normal, log-logistic, log-Gumbel, and Weibull distributions |

|  |  |
| --- | --- |
| Amoxicillin | Cephalexin |
|  |  |
| Chloramphenicol | Chlortetracycline |
|  |  |
| Ciprofloxacin | Clarithromycin |
|  |  |
| Doxycycline | Enrofloxacin |
|  |  |
| Fleroxacin | Florfenicol |
|  |  |
| Lincomycin | Lomefloxacin |
|  |  |
| Norfloxacin | Ofloxacin |
|  |  |
| Oxytetracycline | Pefloxacin |
|  |  |
| Penicillin | Roxithromycin |
|  |  |
| Sulfadiazine | Sulfamethoxazole |
|  |  |
| Tetracycline | Trimethoprim |
|  |  |
| Tylosin |  |
|  | Figure S The visual goodness of fit of SSD models of minimal selective concentration data based on the log-normal, log-logistic, log-Gumbel, and Weibull distributions |

Table S1 Ecotoxicity data of target antibiotics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Chemicals** | **Abbrev.** | **Species** | **Species group** | **Exposure time (days)** | **Endpoints** | **Effects** | **Toxicity values (μg/L)** | **References** |
| Sulfadiazine | SDZ | *Daphnia magna* | Crustaceans | 21 | EC10 | Reproduction | 8800 | (Wollenberger et al., 2000) |
| Sulfamethazine | SMZ | *Daphnia magna* | Crustaceans | 21 | NOEC | Reproduction | 1563 | (De Liguoro et al., 2009) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Population | 300 | (Brain et al., 2004b) |
| Sulfamethoxazole | SMX | *Carassius auratus* | Fish | 4 | LOEC | Enzyme(s) | 16 | (Li et al., 2012) |
|  |  | *Danio rerio* | Fish | 21 | NOEC | Mortality | 533 | (Madureira et al., 2012) |
|  |  | *Daphnia magna* | Crustaceans | 21 | NOEC | Growth | 120 | (Lu et al., 2013) |
|  |  | *Hydra vulgaris* | Invertebrates | 4 | MATC | Morphology | 7070 | (Quinn et al., 2008) |
|  |  | *Lemna gibba* | Plant | 7 | LOEC | Biochemistry | 9.4 | (Brain et al., 2008) |
|  |  | *Limnodynastes peronii* | Amphibians | 21 | NOEC | Development | 10 | (Melvin et al., 2014) |
|  |  | *Pseudokirchneriella subcapitata* | Algae | 4 | NOEC | Physiology | 500 | (Nie et al., 2013) |
| Sulfathiazole | STZ | *Daphnia magna* | Crustaceans | 21 | NOEC | Reproduction | 11000 | (Park and Choi, 2008) |
|  |  | *Chironomus riparius* | Insects | 4 | NOEC | Genetics | 10 | (Park and Kwak, 2012) |
| Sulfachlorpyridazine | SCP | *Daphnia magna* | Crustaceans | 2 | EC50 | Intoxication | 375300 | (Kim et al., 2007) |
|  |  | *Oryzias latipes* | Fish | 4 | LC50 | Mortality | 535700 | (Kim et al., 2007) |
| Sulfameter | SM | *Pseudokirchneriella subcapitata* | Algae | 3 | EC50 | Growth Inhibition | 8646.156 | QSAR Toolbox |
|  |  | *Daphnia magna* | Crustaceans | 2 | EC50 | Immobilisation | 15499.69 | QSAR Toolbox |
|  |  | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 46123.59 | QSAR Toolbox |
| Sulfamonomethoxine | SMM | *Pseudokirchneriella subcapitata* | Algae | 3 | EC50 | Growth Inhibition | 6852.091 | QSAR Toolbox |
|  |  | *Daphnia magna* | Crustaceans | 2 | EC50 | Immobilisation | 10309.16 | QSAR Toolbox |
|  |  | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 46123.59 | QSAR Toolbox |
| Sulfaquinoxaline | SQX | *Daphnia magna* | Crustaceans | 2 | EC50 | Intoxication | 131000 | (De Liguoro et al., 2009) |
| Sulfaguanidine | SG | *Daphnia magna* | Crustaceans | 2 | EC50 | Intoxication | 3860 | (De Liguoro et al., 2009) |
| Ormetoprim | OMP | *Pseudokirchneriella subcapitata* | Algae | 3 | EC50 | Growth Inhibition | 1378.838 | QSAR Toolbox |
|  |  | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 12865.69 | QSAR Toolbox |
| Trimethoprim | TMP | *Anabaena variabilis* | Algae | 6 | NOEC | Population | 3100 | (Ando et al., 2007) |
|  |  | *Danio rerio* | Fish | 21 | NOEC | Growth | 157 | (Madureira et al., 2012) |
|  |  | *Daphnia magna* | Crustaceans | 21 | NOEC | Reproduction | 3120 | (De Liguoro et al., 2012) |
|  |  | *Diamesa zernyi* | Insects | 4 | LOEC | Behavior | 400000 | (Villa et al., 2018) |
|  |  | *Dreissena polymorpha* | Molluscs | 4 | NOEC | Cell(s) | 0.29 | (Parolini et al., 2013) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Injury | 1000 | (Brain et al., 2004a) |
|  |  | *Lemna minor* | Plant | 7 | NOEC | Growth | 6250 | (De Liguoro et al., 2012) |
|  |  | *Microcystis aeruginosa* | Algae | 6 | NOEC | Population | 100000 | (Ando et al., 2007) |
|  |  | *Microcystis wesenbergii* | Algae | 6 | NOEC | Population | 3100 | (Ando et al., 2007) |
|  |  | *Nostoc sp.* | Algae | 6 | NOEC | Population | 3100 | (Ando et al., 2007) |
|  |  | *Poecilia reticulata* | Fish | 14 | NOEC | Behavior | 25000 | (De Liguoro et al., 2012) |
|  |  | *Pseudokirchneriella subcapitata* | Algae | 4 | NOEC | Population | 12500 | (De Liguoro et al., 2012) |
|  |  | *Synechococcus leopoliensis* | Algae | 6 | NOEC | Population | 13000 | (Ando et al., 2007) |
| Oxytetracycline | OTC | *Branchinella thailandensis* | Crustaceans | 12 | NOEC | Mortality | 250000 | (Saejung et al., 2014) |
|  |  | *Chlamydomonas reinhardtii* | Algae | 7 | NOEC | Population | 100 | (Garcia et al., 2008) |
|  |  | *Daphnia magna* | Crustaceans | 21 | EC10 | Reproduction | 7400 | (Wollenberger et al., 2000) |
|  |  | *Labeo rohita* | Fish | 25 | NOEC | Enzyme(s) | 80000 | (Ambili et al., 2013) |
| Tetracycline | TC | *Daphnia magna* | Crustaceans | 21 | NOEC | Biochemistry | 10 | (Kim et al., 2014) |
|  |  | *Gambusia holbrooki* | Fish | 4 | NOEC | Injury | 0.005 | (Nunes et al., 2015) |
|  |  | *Lamellidens corrianus* | Molluscs | 21 | LOEC | Physiology | 73820 | (Nandurkar and Zambare, 2010) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Population | 30 | (Brain et al., 2004b) |
|  |  | *Microcystis aeruginosa* | Algae | 7 | NOEC | Population | 50 | (Yang et al., 2013) |
|  |  | *Parreysia cylindrica* | Molluscs | 21 | LOEC | Biochemistry | 33300 | (Nandurkar and Zambare, 2012) |
| Chlortetracycline | CTC | *Scenedesmus acutus var. acutus* | Algae | 10 | LOEC | Population | 500 | (Guo and Chen, 2012) |
|  |  | *Microcystis aeruginosa* | Algae | 10 | NOEC | Population | 500 | (Guo and Chen, 2012) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Reproduction | 30 | (Brain et al., 2004b) |
| Doxycycline | DC | *Lemna gibba* | Plant | 7 | NOEC | Population | 100 | (Brain et al., 2004b) |
| Methacycline | MT | *Pseudokirchneriella subcapitata* | Algae | 3 | EC50 | Growth Inhibition | 127.378 | QSAR Toolbox |
| Norfloxacin | NFX | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 100196.9297 | QSAR Toolbox |
| Ciprofloxacin | CFX | *Lemna gibba* | Plant | 7 | NOEC | Population | 100 | (Brain et al., 2004b) |
|  |  | *Pseudokirchneriella subcapitata* | Algae | 4 | NOEC | Physiology | 500 | (Liu et al., 2011) |
| Ofloxacin | OFX | *Lemna gibba* | Plant | 7 | NOEC | Population | 100 | (Brain et al., 2004b) |
| Lomefloxacin | LFX | *Lemna gibba* | Plant | 7 | NOEC | Reproduction | 10 | (Brain et al., 2004b) |
| Enrofloxacin | EFX | *Daphnia magna* | Crustaceans | 21 | NOEC | Mortality | 5000 | (Park and Choi, 2008) |
| Fleroxacin | FL | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 2351146.974 | QSAR Toolbox |
| Pefloxacin | PEF | *Anabaena cylindrica* | Algae | 6 | NOEC | Population | 25 | (Ando et al., 2007) |
|  |  | *Anabaena flosaquae* | Algae | 6 | NOEC | Population | 39 | (Ando et al., 2007) |
|  |  | *Anabaena variabilis* | Algae | 6 | NOEC | Population | 9.8 | (Ando et al., 2007) |
|  |  | *Carassius auratus* | Fish | 7 | NOEC | Enzyme(s) | 2.7 | (Liu et al., 2014) |
|  |  | *Daphnia magna* | Crustaceans | 21 | NOEC | Growth | 120 | (Lu et al., 2013) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Population | 300 | (Brain et al., 2004b) |
|  |  | *Microcystis aeruginosa* | Algae | 6 | NOEC | Population | 1.6 | (Ando et al., 2007) |
|  |  | *Microcystis wesenbergii* | Algae | 6 | NOEC | Population | 6.3 | (Ando et al., 2007) |
|  |  | *Nostoc sp.* | Algae | 6 | NOEC | Population | 310 | (Ando et al., 2007) |
|  |  | *Synechococcus leopoliensis* | Algae | 6 | NOEC | Population | 160 | (Ando et al., 2007) |
|  |  | *Synechococcus sp.* | Algae | 6 | NOEC | Population | 160 | (Ando et al., 2007) |
| Difloxacin | DIF | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 100196.9297 | QSAR Toolbox |
| Leucomycin | LCM | *Pseudokirchneriella subcapitata* | Algae | 3 | EC50 | Growth Inhibition | 5694.039 | QSAR Toolbox |
|  |  | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 2012.73 | QSAR Toolbox |
| Clarithromycin | CTM | *Pseudokirchneriella subcapitata* | Algae | 3 | LOEC | Population | 40 | (Yang et al., 2008) |
|  |  | *Danio rerio* | Fish | 4 | NOEC | Mortality | 1000000 | (Isidori et al., 2005) |
| Roxithromycin | RTM | *Lemna gibba* | Plant | 7 | NOEC | Reproduction | 1000 | (Brain et al., 2004b) |
| Tylosin | TYL | *Lemna gibba* | Plant | 7 | NOEC | Population | 100 | (Brain et al., 2004b) |
| Erythromycin-H2O | ETM-H2O | *Pimephales promelas* | Fish | 4 | LC50 | Mortality | 3606.035489 | QSAR Toolbox |
| Cephalexin | CPX | *Lemna gibba* | Plant | 7 | NOEC | Population | 1000 | (Brain et al., 2004b) |
| Amoxicillin | AMOX | *Anabaena sp.* | Algae | 3 | EC10 | Population | 6160 | (González-Pleiter et al., 2013) |
|  |  | *Microcystis aeruginosa* | Algae | 7 | EC50 | Population | 3.7 | (Lützhøft et al., 1999) |
|  |  | *Danio rerio* | Fish | 4 | NOEC | Enzyme(s) | 10000 | (Oliveira et al., 2013) |
|  |  | *Hydra vulgaris* | Invertebrates | 7 | NOEC | Intoxication | 10 | (Pascoe et al., 2003) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Population | 1000 | (Brain et al., 2004b) |
|  |  | *Oncorhynchus mykiss* | Fish | 1 | NOEC | Enzyme(s) | 182702 | (Laville et al., 2004) |
| Penicillin | PEN | *Danio rerio* | Fish | 5.8333 | LC50 | Mortality | 1372338.048 | (Selderslaghs et al., 2012) |
|  |  | *Microcystis aeruginosa* | Algae | 7 | EC50 | Population | 6 | (Halling-Sørensen, 2000) |
| Cephazolin | KZ | *Pseudokirchneriella subcapitata* | Algae | 3 | EC50 | Growth Inhibition | 19.28563 | QSAR Toolbox |
| Florfenicol | FF | *Pseudokirchneriella subcapitata* | Algae | 2 | EC50 | Population | 2600 | (Christensen et al., 2006) |
|  |  | *Daphnia magna* | Crustaceans | 2 | EC50 | Intoxication | 337000 | (Lundén and Bylund, 2000) |
| Chloramphenicol | CAP | *Branchinella thailandensis* | Crustaceans | 7 | NOEC | Mortality | 100000 | (Saejung et al., 2014) |
|  |  | *Lamellidens corrianus* | Molluscs | 7 | NOEC | Biochemistry | 94070 | (Nagpure and Zambare, 2008) |
|  |  | *Parreysia cylindrica* | Molluscs | 7 | NOEC | Biochemistry | 73810 | (Nandurkar and Zambare, 2012) |
| Lincomycin | LIN | *Danio rerio* | Fish | 4 | NOEC | Mortality | 1000000 | (Isidori et al., 2005) |
|  |  | *Lemna gibba* | Plant | 7 | NOEC | Population | 30 | (Brain et al., 2004b) |
|  |  | *Chironomus riparius* | Insects | 4 | NOEC | Genetics | 100 | (Park and Kwak, 2012) |

Table S2 Minimum inhibitory concentration data of target antibiotics

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bacterial genera** | **Sulfadiazine** | **Sulfamethoxazole** | **Sulfathiazole** | **Ormetoprim** | **Trimethoprim** | **Oxytetracycline** | **Tetracycline** | **Chlortetracycline** | **Doxycycline** | **Methacycline** | **Norfloxacin** | **Ciprofloxacin** | **Ofloxacin** | **Lomefloxacin** |
| Acinetobacter | - | - | - | - | 500 | - | 32 | - | 125 | - | 64 | 4 | 16 | - |
| Actinobacillus | 2000 | - | - | - | - | - | 125 | - | 250 | - | - | - | - | - |
| Actinomyces | - | - | - | - | - | - | 125 | - | 32 | - | - | 250 | - | - |
| Aerococcus | - | - | - | - | - | - | - | - | - | - | - | 250 | - | - |
| Aeromonas | - | - | - | - | 128000 | - | - | - | 4000 | - | - | - | 8 | - |
| Alcaligenes | - | - | - | - | - | - | - | - | - | - | - | 250 | - | - |
| Alternaria | - | - | - | - | - | - | 6250 | - | - | - | - | - | - | - |
| Anaerobic cocci Gram positive | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Arcanobacterium | - | - | - | - | - | - | 125 | - | - | - | - | - | - | - |
| Bacilus | - | - | - | - | - | 1000 | 1 | - | 1953 | - | 49 | - | 50 | - |
| Bacteroides | - | - | - | - | 16000 | - | 25 | - | 32 | - | 200 | 500 | 100 | - |
| Bifidobacterium | - | - | - | - | - | - | 32 | - | 32 | - | 25 | - | - | - |
| Bilophila | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bordetella | - | - | - | - | - | - | 125 | 500 | 39 | - | 1000 | - | 63 | 1000 |
| Borrelia | - | - | - | - | - | - | 10 | - | 60 | - | 1000 | - | 1000 | - |
| Brachyspira | - | - | - | - | - | - | - | - | 1250 | - | - | - | - | - |
| Branhamella | - | - | - | - | - | - | - | - | 8 | - | - | - | - | - |
| Brevibacterium | - | - | - | - | - | - | - | - | 120 | - | - | - | - | - |
| Brochothrix | - | - | - | - | - | 124000 | - | - | - | - | - | - | - | - |
| Brucella | - | - | - | - | - | - | 130 | - | 120 | - | - | - | 125 | - |
| Burkholderia | - | - | - | - | 2000 | 16000 | 2000 | - | 500 | - | 1000 | 32 | 125 | - |
| Campylobacter | - | - | - | - | 64000 | - | 30 | - | 32 | - | - | 16 | 31 | - |
| Capnocytophaga | - | - | - | - | - | - | 60 | - | 64 | - | 25 | - | 25 | - |
| Cedecea | - | - | - | - | - | - | - | - | - | - | - | - | 62500 | - |
| Cellulomonas | - | - | - | - | - | - | 30 | - | - | - | - | - | - | - |
| Chlamydia | - | - | - | - | - | - | - | - | 16 | - | 16000 | - | 500 | 2000 |
| Chryseobacterium | - | - | - | - | - | - | - | - | - | - | - | 125 | - | - |
| Citrobacter | - | 2000 | - | - | 64 | - | 250 | - | 250 | - | 16 | 4 | 31 | - |
| Clavibacter | - | - | - | - | - | 4000 | - | - | - | - | - | - | - | - |
| Clostridium | - | - | - | - | - | - | 8 | - | 60 | - | 780 | 64 | 250 | - |
| Collinsella | - | - | - | - | - | - | 60 | - | - | - | - | - | - | - |
| Corynebacterium | - | - | - | - | - | - | 8 | - | 60 | - | 390 | 8 | 200 | - |
| Coryneform | - | - | - | - | - | - | - | - | 120 | - | - | - | - | - |
| Dermabacter | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Dialister | - | - | - | - | - | - | 60 | - | - | - | - | - | - | - |
| Diplococcus | - | - | - | - | - | 40 | 40 | 20 | 5 | 40 | - | - | - | - |
| Edwardsiella | - | - | - | - | 312500 | - | 130 | - | 60 | - | - | - | - | - |
| Eikenella | - | - | - | - | - | - | 1000 | - | 1000 | - | - | - | - | - |
| Enterobacter | - | 30 | - | - | 64 | - | 1 | - | 60 | - | 16 | 2 | 16 | - |
| Enterobacteriaceae | - | - | - | - | - | - | - | - | - | - | - | - | 60 | - |
| Enterococci | - | - | - | - | - | - | - | - | - | - | - | - | 1000 | - |
| Enterococcus | - | - | - | - | 125 | 250 | 30 | - | 64 | - | 500 | 16 | 200 | - |
| Erysipelothrix | - | - | - | - | - | - | - | - | 500 | - | - | - | 250 | - |
| Erwinia | - | - | - | - | - | - | 31250 | - | - | - | - | - | - | - |
| Escherichia | 128000 | 2000 | - | 1260 | 62 | 250 | 1 | 32000 | 64 | - | 16 | 2 | 16 | 25 |
| Eubacterium | - | - | - | - | - | - | 60 | - | 500 | - | 6250 | - | 120 | - |
| Finegoldia | - | - | - | - | - | - | - | - | 750 | - | - | - | 250 | - |
| Flavobacterium | - | - | - | - | - | 15630 | - | - | - | - | - | - | - | - |
| Fusobacterium | - | - | - | - | - | 30 | 30 | 100 | 32 | - | 6250 | - | 1000 | - |
| Gardnerella | - | - | - | - | - | - | - | - | 125 | - | - | - | - | - |
| Gemella | - | - | - | - | - | - | - | - | 64 | - | - | - | - | - |
| Haemolytic | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Haemophilus | - | 60 | 32000 | - | 2 | 250 | 60 | 500 | 30 | 400 | - | 2 | 8 | - |
| Hafnia | - | - | - | - | - | - | 500 | - | - | - | 16 | 8 | 100 | - |
| Helicobacter | - | - | - | - | - | - | 2 | - | - | - | 50 | 2 | 50 | - |
| Hemolytic | - | - | - | - | - | - | - | - | 64 | - | - | - | - | - |
| Jonesia | - | - | - | - | - | - | 250 | - | - | - | - | - | - | - |
| Kingella | - | - | - | - | - | - | 125 | - | 64 | - | - | 8 | - | - |
| Klebsiella | 4000 | 1000 | - | - | 16 | 16000 | 125 | - | 125 | - | 32 | 4 | 32 | - |
| Kluyvera | - | - | - | - | - | - | 500 | - | - | - | - | 8 | - | - |
| Lactobacillus | - | - | - | - | 125 | - | 64 | - | 120 | - | 250000 | - | 120 | - |
| Lactococcus | - | - | - | - | 125 | - | 64 | - | - | - | - | - | - | - |
| Lawsonia | - | - | - | - | - | - | - | 125 | - | - | - | - | - | - |
| Legionella | - | - | - | - | - | - | - | - | 1000 | - | - | - | 8 | 4 |
| Leptotrichia | - | - | - | - | - | - | 30 | - | 500 | - | - | - | - | - |
| Leuconostoc | - | - | - | - | 125 | - | 250 | - | 1000 | - | - | - | 2000 | - |
| Listeria | - | 8000 | - | - | 16 | 1000 | 64 | - | 60 | - | 4000 | 250 | 1000 | - |
| Mannheimia | - | - | - | - | - | - | 250 | - | 250 | - | - | - | - | - |
| Microbacterium | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Micrococcus | - | - | - | - | - | 1000 | 4000 | - | - | - | 12500 | - | 1560 | - |
| Micromonas | - | - | - | - | - | - | - | - | - | - | - | - | 250 | - |
| Moraxella | - | 30 | - | - | 1000 | - | 64 | - | 64 | - | - | 8 | 30 | - |
| Morganella | - | - | - | - | 500 | - | 500 | - | 500 | - | 200 | 4 | 16 | - |
| Mycobacterium | 2000 | - | - | - | - | - | 120 | - | 250 | - | 2000 | - | 64 | 600 |
| Mycoplasma | - | - | - | - | - | 25 | 15 | 50 | 6 | - | - | - | 60 | - |
| Neisseria | 500 | 250 | - | - | - | - | 16 | - | 60 | - | 25 | 2 | 1 | - |
| Nocardia | 16000 | 1600000 | - | - | 3100 | 25000 | 25000 | 12500 | 3100 | 6300 | - | - | - | - |
| Oerskovia | - | - | - | - | - | - | - | - | 120 | - | - | - | - | - |
| Olsenella | - | - | - | - | - | - | 125 | - | - | - | - | - | - | - |
| Paenibacillus | - | - | - | - | - | 16 | - | - | - | - | - | - | - | - |
| Pandoraea | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pantoea | - | - | - | - | - | - | 500 | - | - | - | - | - | - | - |
| Parvimonas | - | - | - | - | - | - | - | - | 47 | - | - | - | - | - |
| Pasteurella | - | - | - | - | - | 125 | 64 | 1000 | 64 | - | - | 4 | - | - |
| Pediococcus | - | - | - | - | 125 | - | 250 | - | 2000 | - | - | - | 8000 | - |
| Peptococcus | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Peptoniphilus | - | - | - | - | - | - | - | - | 64 | - | - | - | - | - |
| Peptostreptococcus | - | - | - | - | - | - | 125 | - | 500 | - | 780 | 32 | 250 | - |
| Plesiomonas | - | - | - | - | 4900 | - | - | - | 4000 | - | - | - | 16 | - |
| Pneumococci | - | - | - | - | - | - | 60 | - | 30 | - | - | - | 1000 | - |
| Porphyromonas | - | - | - | - | - | - | 60 | - | 32 | - | - | - | - | - |
| Prevotella | - | - | - | - | - | - | 30 | - | 32 | - | - | - | 1000 | - |
| Propionibacterium | - | - | - | - | - | - | 30 | - | 32 | - | - | - | 120 | - |
| Proteus | 32000 | - | - | - | 125 | 16000 | 488 | - | 250 | - | 64 | 4 | 31 | - |
| Providencia | - | - | - | - | - | - | 2000 | - | - | - | 32 | 4 | 16 | - |
| Pseudomonas | 32000 | 128000 | - | - | - | 8000 | 150 | - | 500 | 800 | 125 | 8 | 32 | - |
| Ralstonia | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Raoultella | - | - | - | - | - | - | 500 | - | - | - | - | 8 | - | - |
| Rhodococcus | - | - | - | - | - | - | - | - | 120 | - | - | - | - | - |
| Rothia | - | - | - | - | - | - | - | - | 64 | - | - | - | - | - |
| Ruminococcus | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Salmonella | - | 8000 | - | - | 125 | 2000 | 4 | 8000 | 250 | - | 25 | 8 | 12 | - |
| Selenomonas | - | - | - | - | - | - | 60 | - | 500 | - | - | - | - | - |
| Serratia | - | - | - | - | 125 | - | 500 | - | 250 | - | 16 | 8 | 32 | - |
| Shigella | 312 | - | - | - | 9800 | 1000 | 196.6 | - | 15600 | - | 6 | 8 | 3 | - |
| Sinorhizobium | - | - | - | - | - | - | 240 | - | - | - | - | - | - | - |
| Staphylococci | - | - | - | - | - | - | - | - | - | - | - | - | 120 | - |
| Staphylococcus | 8000 | 8000 | - | - | 125 | 250 | 2 | - | 16 | - | 250 | 8 | 32 | 500 |
| Stenotrophomonas | - | - | - | - | - | - | 500 | - | 120 | - | 4000 | 8 | 32 | - |
| Streptococci | - | - | - | - | - | - | - | - | - | - | - | - | 500 | - |
| Streptococcus | 32000 | 500 | - | - | 4 | 125 | 16 | 500 | 16 | - | 390 | 8 | 250 | - |
| Tannerella | - | - | - | - | - | - | - | - | 500 | - | - | - | - | - |
| Treponema | - | - | - | - | - | 780 | 390 | 6250 | - | - | - | - | - | - |
| Turicella | - | - | - | - | - | - | - | - | 120 | - | - | - | - | - |
| Ureaplasma | - | - | - | - | - | - | - | - | 16 | - | - | - | 500 | - |
| Veillonella | - | - | - | - | - | - | 500 | - | 1000 | - | 780 | - | 250 | - |
| Vibrio | - | - | - | - | 1200 | 780 | 64000 | - | - | - | 10000 | - | - | - |
| Weissella | - | - | - | - | 1000 | - | 2000 | - | - | - | - | - | - | - |
| Xanthomonas | - | - | - | - | 16000 | - | 9000 | - | - | - | - | - | - | - |
| Xylella | - | - | - | - | - | - | 1000 | - | - | - | - | - | - | - |
| Yersinia | - | - | - | - | 64 | - | 500 | - | 250 | - | - | 8 | 64 | - |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bacterial genera** | **Enrofloxacin** | **Fleroxacin** | **Pefloxacin** | **Difloxacin** | **Clarithromycin** | **Roxithromycin** | **Tylosin** | **Cephalexin** | **Amoxicillin** | **Penicillin** | **Florfenicol** | **Chloramphenicol** | **Lincomycin** |
| Acinetobacter | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Actinobacillus | - | - | - | - | - | - | - | - | - | - | 125 | - | - |
| Actinomyces | - | - | - | - | 4 | - | - | - | 8 | - | - | - | - |
| Aerococcus | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Aeromonas | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Alcaligenes | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Alternaria | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Anaerobic cocci Gram positive | - | - | - | - | - | - | - | - | 32 | - | - | - | - |
| Arcanobacterium | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Bacilus | - | - | - | - | 100 | - | - | - | - | 15 | - | 1000 | - |
| Bacteroides | - | 4000 | 1000 | - | 16 | 120 | - | 4000 | 32 | 15 | - | 15 | - |
| Bifidobacterium | - | - | - | - | - | - | - | - | - | 16 | - | 250 | - |
| Bilophila | - | - | - | - | 4000 | 16000 | - | - | - | 2000 | - | - | - |
| Bordetella | - | 625 | 250 | - | - | - | - | - | - | 80000 | 500 | - | - |
| Borrelia | - | - | - | - | 1.9 | 1.9 | - | - | - | 15 | - | 1250 | - |
| Brachyspira | - | - | - | - | - | - | 100 | - | - | - | - | 1000 | 100 |
| Branhamella | - | - | - | - | - | - | - | 2000 | - | - | - | - | - |
| Brevibacterium | - | - | - | - | 30 | 30 | - | - | - | 30 | - | - | 120 |
| Brochothrix | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Brucella | - | - | - | - | - | - | - | - | - | 250 | - | 250 | - |
| Burkholderia | 2000 | - | - | - | 4000 | 32000 | - | - | - | - | - | - | - |
| Campylobacter | - | - | - | - | 30 | - | - | - | 250 | 30 | 32 | 1000 | - |
| Capnocytophaga | - | - | - | - | - | - | - | - | - | 4 | - | - | - |
| Cedecea | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cellulomonas | - | - | - | - | - | - | - | - | - | 60 | - | - | - |
| Chlamydia | - | 6250 | - | - | 15 | 25 | - | - | - | - | - | - | - |
| Chryseobacterium | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Citrobacter | - | - | - | - | - | - | - | 6500 | 1000 | 1024000 | - | 2000 | - |
| Clavibacter | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Clostridium | - | - | - | - | 125 | 500 | 125 | 32000 | 32 | 20 | - | 15 | 250 |
| Collinsella | - | - | - | - | - | - | - | - | - | 30 | - | - | - |
| Corynebacterium | - | - | - | - | 8 | 15 | - | - | - | 15 | - | 1000 | 60 |
| Coryneform | - | - | - | - | 30 | 30 | - | - | - | 30 | - | - | 120 |
| Dermabacter | - | - | - | - | - | - | - | - | - | 20 | - | - | - |
| Dialister | - | - | - | - | - | - | - | - | - | 30 | - | - | - |
| Diplococcus | - | - | - | - | - | - | - | 200 | - | - | - | 12500 | - |
| Edwardsiella | - | - | - | - | 4000 | 8000 | - | - | - | 60 | - | - | - |
| Eikenella | - | - | - | - | - | - | - | - | - | 250 | - | 2000 | - |
| Enterobacter | - | - | - | - | - | - | - | 4000 | 1000 | 1024000 | - | 2000 | - |
| Enterobacteriaceae | - | - | - | - | - | - | - | 250 | - | - | - | 250 | - |
| Enterococci | - | - | - | - | 30 | 30 | - | 32000 | - | 500 | - | 1000 | - |
| Enterococcus | 50 | - | 2000 | - | 6 | 64 | 250 | 64000 | - | 4 | 2000 | 120 | 100 |
| Erysipelothrix | - | - | - | - | 60 | 60 | - | - | - | 60 | - | - | 60 |
| Erwinia | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Escherichia | 4 | 25 | 60000 | 187.5 | 6250 | - | 8000 | 780 | 500 | 1000 | 500 | 15 | 8000 |
| Eubacterium | - | - | - | - | - | - | - | - | - | 20 | - | 120 | - |
| Finegoldia | - | - | - | - | - | - | - | - | - | 20 | - | 4000 | - |
| Flavobacterium | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Fusobacterium | - | - | - | - | 15 | 15 | 2000 | - | 32 | 15 | - | 30 | 10 |
| Gardnerella | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Gemella | - | - | - | - | - | - | - | - | - | 4 | - | - | - |
| Haemolytic | - | - | - | - | 15 | 15 | - | - | - | 4 | - | - | - |
| Haemophilus | 120 | - | - | - | 8 | 250 | 16000 | 1000 | 32 | 4 | 125 | 12 | 4000 |
| Hafnia | - | - | - | - | - | - | - | - | - | - | - | 2000 | - |
| Helicobacter | - | - | 1000 | - | 4 | - | - | 30 | 2 | 15 | - | 1000 | 3200 |
| Hemolytic | - | - | - | - | - | - | - | - | - | 16 | - | - | - |
| Jonesia | - | - | - | - | - | - | - | - | - | 2000 | - | - | - |
| Kingella | - | - | - | - | 32 | - | - | - | 8 | - | - | - | - |
| Klebsiella | - | - | - | - | 12500 | - | - | 780 | 250 | 4 | - | 500 | 8000 |
| Kluyvera | - | - | - | - | - | - | - | - | - | - | - | 1000 | - |
| Lactobacillus | 125 | - | - | - | 1000 | - | 125 | 90000 | - | 20 | 8000 | 125 | 125 |
| Lactococcus | 500 | - | - | - | - | - | 250 | - | - | - | - | 500 | 125 |
| Lawsonia | - | - | - | - | - | - | 375 | - | - | - | - | - | 8000 |
| Legionella | - | - | - | - | 1 | 30 | - | - | 125 | - | - | 125 | - |
| Leptotrichia | - | - | - | - | - | - | - | - | - | 30 | - | - | - |
| Leuconostoc | 500 | - | - | - | - | - | 250 | - | - | - | - | - | 125 |
| Listeria | 500 | - | - | - | 60 | 250 | 1000 | - | - | 60 | - | 500 | 2000 |
| Mannheimia | 7 | - | - | - | - | - | - | - | 16 | 30 | 120 | 250 | - |
| Microbacterium | - | - | - | - | - | - | - | - | - | 30 | - | - | - |
| Micrococcus | - | - | - | - | - | - | 18000 | - | - | 94 | - | 500 | 18000 |
| Micromonas | - | - | - | - | - | - | - | - | - | 20 | - | - | - |
| Moraxella | - | - | - | - | 4 | 30 | - | - | 2 | 4 | - | 125 | - |
| Morganella | - | - | - | - | - | - | - | 500 | 500 | - | - | - | - |
| Mycobacterium | - | - | 2000 | 500 | 30 | 30 | 32000 | - | - | - | - | 8000 | - |
| Mycoplasma | 5 | - | - | - | 0.48 | 1.9 | 6 | - | - | - | 120 | 8000 | 50 |
| Neisseria | - | - | - | - | 3 | 15 | - | 250 | 32 | 4 | - | 60 | 8000 |
| Nocardia | - | - | - | - | - | - | - | 25000 | - | 25000 | - | 12500 | 100000 |
| Oerskovia | - | - | - | - | 30 | 30 | - | - | - | 30 | - | - | 120 |
| Olsenella | - | - | - | - | - | - | - | - | - | 30 | - | - | - |
| Paenibacillus | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pandoraea | - | - | - | - | - | - | - | - | - | - | - | 8000 | - |
| Pantoea | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Parvimonas | - | - | - | - | - | - | - | - | - | 16 | - | 750 | - |
| Pasteurella | 3.75 | - | - | - | 390 | - | 25000 | - | 64 | 30 | 64 | 125 | 155000 |
| Pediococcus | 500 | - | - | - | - | - | 250 | - | - | 1000 | - | 4000 | 125 |
| Peptococcus | - | - | - | - | - | - | - | 32000 | - | 15 | - | 750 | - |
| Peptoniphilus | - | - | - | - | - | - | - | - | - | 15 | - | 2000 | - |
| Peptostreptococcus | - | - | - | - | 4 | 30 | - | 32000 | - | 15 | - | 30 | - |
| Plesiomonas | 500 | - | - | - | - | - | - | - | - | - | - | - | - |
| Pneumococci | - | - | - | - | 16 | 30 | - | - | - | 8 | - | 1000 | - |
| Porphyromonas | - | - | - | - | 15 | 30 | - | - | 32 | 15 | - | - | - |
| Prevotella | - | - | - | - | 15 | 30 | - | - | 32 | 8 | - | 1000 | - |
| Propionibacterium | - | - | - | - | 4 | - | - | - | 32 | 16 | - | 500 | - |
| Proteus | - | - | - | - | - | - | - | 120 | 250 | 4000 | - | 7 | 1000000 |
| Providencia | - | - | - | - | - | - | - | 120 | - | - | - | 32000 | - |
| Pseudomonas | - | 1000 | 500000 | - | 250000 | 32000 | - | 32000 | - | 50000 | - | 62 | - |
| Ralstonia | - | - | - | - | - | - | - | - | - | - | - | 20000 | - |
| Raoultella | - | - | - | - | - | - | - | - | - | - | - | 1000 | - |
| Rhodococcus | 30 | - | - | - | 15 | 15 | - | - | - | 15 | 2000 | 4000 | 250 |
| Rothia | - | - | - | - | - | - | - | - | - | 4 | - | - | - |
| Ruminococcus | - | - | - | - | - | - | - | - | - | 1000 | - | 3000 | - |
| Salmonella | 30 | - | - | - | - | - | - | 800 | 250 | 4000 | 1000 | 7 | 125000 |
| Selenomonas | - | - | - | - | - | - | - | - | - | 30 | - | - | - |
| Serratia | - | - | - | - | - | - | - | 2000 | 2000 | 300000 | 2000 | 1000 | - |
| Shigella | - | - | - | - | - | - | - | - | - | 1024000 | - | 250 | - |
| Sinorhizobium | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Staphylococci | 250 | - | - | - | 30 | 30 | - | 500 | - | 7 | - | 120 | - |
| Staphylococcus | 30 | 390 | 250000 | 125 | 15 | 30 | 500 | 500 | - | 4 | 1000 | 7 | 125 |
| Stenotrophomonas | - | - | 1000 | - | 8000 | - | - | 32000 | - | - | - | 4000 | - |
| Streptococci | - | - | - | - | 1 | - | - | - | - | 15 | - | - | - |
| Streptococcus | 1000 | - | - | - | 1 | 8 | 125 | 200 | 2 | 4 | 250 | 50 | 10 |
| Tannerella | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Treponema | - | - | - | - | - | - | 3130 | - | - | 780 | - | 1560 | 200 |
| Turicella | - | - | - | - | 30 | 30 | - | - | - | 30 | - | - | 120 |
| Ureaplasma | - | - | - | - | 8 | 60 | - | - | - | - | - | - | - |
| Veillonella | - | - | - | - | 1000 | 500 | - | - | - | 15 | - | 15 | - |
| Vibrio | - | - | - | - | - | - | - | - | - | 1000 | - | 1560 | - |
| Weissella | 2000 | - | - | - | - | - | 500 | - | - | - | - | 2000 | 125 |
| Xanthomonas | - | - | - | - | - | - | - | 256000 | - | - | - | 7810 | - |
| Xylella | - | - | - | - | - | - | - | - | - | 32000 | - | 1000 | - |
| Yersinia | - | - | - | - | - | - | - | - | - | - | - | 3900 | - |

Table S The goodness of fit of SSD models of ecotoxicity data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Chemicals | Distributions | Anderson-Darling test | Kolmogorov-Smirnov test | Akaike Information Criterion (AIC) | Akaike Information Criterion corrected for small sample size (AICc) |
| Amoxicillin | lnorm | NA | NA | 118.2927 | 122.2927 |
| llogis | NA | NA | 118.876 | 122.876 |
| gamma | NA | NA | 118.4568 | 122.4568 |
| weibull | NA | NA | 118.152 | 122.152 |
| Trimethoprim | lnorm | 0.49529 | 0.325401 | 282.0081 | 283.2081 |
| llogis | 0.763763 | 0.663552 | 279.8237 | 281.0237 |
| gamma | 0.582478 | 0.568788 | 280.0326 | 281.2326 |
| weibull | 0.812614 | 0.719961 | 278.475 | 279.675 |
| Pefloxacin | lnorm | 0.813145 | 0.717294 | 126.0358 | 127.5358 |
| llogis | 0.835055 | 0.805378 | 127.14 | 128.64 |
| gamma | 0.853675 | 0.918927 | 124.9465 | 126.4465 |
| weibull | 0.828758 | 0.859297 | 125.1888 | 126.6888 |
| Sulfamethoxazole | lnorm | NA | NA | 102.5521 | 105.5521 |
| llogis | NA | NA | 103.1518 | 106.1518 |
| gamma | NA | NA | 105.1489 | 108.1489 |
| weibull | NA | NA | 103.8685 | 106.8685 |
| Tetracycline | lnorm | NA | NA | 93.3872 | 97.3872 |
| llogis | NA | NA | 93.707 | 97.707 |
| gamma | NA | NA | 92.85292 | 96.85292 |
| weibull | NA | NA | 93.16428 | 97.16428 |

Table S The goodness of fit of SSD models of minimal selective concentration data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Chemicals | Distributions | Anderson-Darling test | Kolmogorov-Smirnov test | Akaike Information Criterion (AIC) | Akaike Information Criterion corrected for small sample size (AICc) |
| Amoxicillin | lnorm | 0.569234 | 0.268927 | 201.6709 | 202.1927 |
| llogis | 0.548771 | 0.242126 | 203.0601 | 203.5819 |
| gamma | 0.288868 | 0.054772 | 206.4343 | 206.956 |
| weibull | 0.465636 | 0.119689 | 203.9278 | 204.4496 |
| Cephalexin | lnorm | 0.470357 | 0.344595 | 459.1471 | 459.6087 |
| llogis | 0.456253 | 0.316117 | 461.781 | 462.2425 |
| gamma | 0.206751 | 0.223995 | 465.88 | 466.3415 |
| weibull | 0.351221 | 0.397544 | 462.2967 | 462.7583 |
| Chloramphenicol | lnorm | 0.377034 | 0.112166 | 821.2785 | 821.466 |
| llogis | 0.412435 | 0.196045 | 823.9274 | 824.1149 |
| gamma | 0.282254 | 0.116539 | 826.1451 | 826.3326 |
| weibull | 0.714653 | 0.605136 | 820.285 | 820.4725 |
| Chlortetracycline | lnorm | 0.922819 | 0.914437 | 161.0437 | 162.377 |
| llogis | 0.919085 | 0.893309 | 162.058 | 163.3913 |
| gamma | 0.663484 | 0.483195 | 163.3999 | 164.7332 |
| weibull | 0.826583 | 0.709961 | 162.2708 | 163.6041 |
| Ciprofloxacin | lnorm | 0.042448 | 0.001861 | 154.7512 | 155.1042 |
| llogis | 0.06775 | 0.017198 | 153.9217 | 154.2747 |
| Clarithromycin | lnorm | 0.087993 | 0.012474 | 365.0075 | 365.2802 |
| llogis | 0.150661 | 0.108049 | 363.1288 | 363.4015 |
| Doxycycline | lnorm | 0.3007 | 0.056104 | 685.6799 | 685.8442 |
| llogis | 0.31096 | 0.083015 | 686.6601 | 686.8244 |
| Enrofloxacin | lnorm | 0.622598 | 0.453354 | 174.9102 | 175.6602 |
| llogis | 0.643907 | 0.544002 | 176.5907 | 177.3407 |
| gamma | 0.734565 | 0.81674 | 174.2041 | 174.9541 |
| weibull | 0.737205 | 0.624928 | 174.0799 | 174.8299 |
| Fleroxacin | lnorm | NA | NA | 79.56884 | 83.56884 |
| llogis | NA | NA | 79.70559 | 83.70559 |
| gamma | NA | NA | 78.57609 | 82.57609 |
| weibull | NA | NA | 78.67107 | 82.67107 |
| Florfenicol | lnorm | 0.865913 | 0.671239 | 170.6199 | 171.6199 |
| llogis | 0.846389 | 0.687175 | 171.7585 | 172.7585 |
| gamma | 0.641538 | 0.671294 | 173.8466 | 174.8466 |
| weibull | 0.795435 | 0.769923 | 172.6968 | 173.6968 |
| Lincomycin | lnorm | 0.10204 | 0.025414 | 433.9996 | 434.4134 |
| llogis | 0.112037 | 0.080989 | 434.8946 | 435.3084 |
| Lomefloxacin | lnorm | NA | NA | 66.41617 | 70.41617 |
| llogis | NA | NA | 66.81623 | 70.81623 |
| gamma | NA | NA | 64.32461 | 68.32461 |
| weibull | NA | NA | 64.88604 | 68.88604 |
| Norfloxacin | lnorm | 0.507571 | 0.41572 | 433.7361 | 434.079 |
| llogis | 0.500409 | 0.524196 | 435.5913 | 435.9342 |
| Ofloxacin | lnorm | 0.695969 | 0.647916 | 519.6567 | 519.871 |
| llogis | 0.768208 | 0.588117 | 518.2452 | 518.4595 |
| Oxytetracycline | lnorm | 0.838858 | 0.79195 | 345.4244 | 345.9698 |
| llogis | 0.821519 | 0.840046 | 347.0498 | 347.5952 |
| Pefloxacin | lnorm | 0.462718 | 0.295562 | 161.3043 | 163.3043 |
| llogis | 0.497689 | 0.467504 | 162.0042 | 164.0042 |
| gamma | 0.344586 | 0.159351 | 164.8448 | 166.8448 |
| weibull | 0.432233 | 0.25495 | 163.4236 | 165.4236 |
| Penicillin | lnorm | 0.000723 | 6.37E-06 | 707.6438 | 707.8105 |
| llogis | 0.002789 | 0.000725 | 699.0471 | 699.2137 |
| Roxithromycin | lnorm | 0.022608 | 0.004693 | 297.2379 | 297.6129 |
| llogis | 0.04748 | 0.025803 | 292.6792 | 293.0542 |
| Sulfadiazine | lnorm | 0.936091 | 0.914923 | 191.6516 | 193.1516 |
| llogis | 0.937129 | 0.938097 | 192.5154 | 194.0154 |
| gamma | 0.910029 | 0.962342 | 192.1978 | 193.6978 |
| weibull | 0.952888 | 0.972394 | 191.7539 | 193.2539 |
| Sulfamethoxazole | lnorm | 0.942551 | 0.884529 | 205.627 | 206.827 |
| llogis | 0.968057 | 0.984363 | 205.8843 | 207.0843 |
| Tetracycline | lnorm | 0.390848 | 0.263762 | 725.4135 | 725.5756 |
| llogis | 0.66648 | 0.675696 | 722.3472 | 722.5094 |
| Trimethoprim | lnorm | 0.487335 | 0.097151 | 392.5712 | 392.9998 |
| llogis | 0.513212 | 0.139604 | 393.2073 | 393.6358 |
| Tylosin | lnorm | 0.587032 | 0.558393 | 265.9628 | 266.6687 |
| llogis | 0.592703 | 0.675632 | 266.8234 | 267.5293 |
| gamma | 0.217101 | 0.130604 | 270.992 | 271.6979 |
| weibull | 0.376277 | 0.294493 | 268.565 | 269.2709 |

Table S Ecological risk quotients of antibiotics in the fresh surface waters of China\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Locations** | **Sulfadiazine** | **Sulfamethazine** | **Sulfamethoxazole** | **Sulfathiazole** | **Sulfachlorpyridazine** | **Sulfameter** | **Sulfamonomethoxine** | **Sulfaquinoxaline** | **Sulfaguanidine** | **Trimethoprim** | **Ormetoprim** | **Oxytetracycline** | **Tetracycline** | **Chlortetracycline** | **Doxycycline** | **Methacycline** | **Norfloxacin** | **Ciprofloxacin** | **Ofloxacin** | **Lomefloxacin** | **Enrofloxacin** | **Fleroxacin** | **Pefloxacin** | **Difloxacin** | **Leucomycin** | **Clarithromycin** | **Roxithromycin** | **Tylosin** | **Erythromycin-H2O** | **Cephalexin** | **Amoxicillin** | **Penicillin** | **Cephazolin** | **Florfenicol** | **Chloramphenicol** | **Lincomycin** |
| **1** | 0.001 | 0.004 | 0.027 | 0.100 | 0.000 | 0.003 | 0.002 | 0.000 | 0.003 | 0.018 | 0.000 | 0.000 | 0.729 | 0.001 | 0.009 | 0.051 | 0.005 | 0.005 | 0.004 | 5.833 | 0.000 | 0.000 | 3.451 | 0.002 | 0.026 | 0.097 | 0.001 | 0.057 | 0.312 | 0.029 | 2.482 | 81.429 | 0.015 | 0.368 | 0.000 | 0.380 |
| **2** | 0.001 | 0.004 | 0.043 | 0.092 | 0.000 | 0.003 | 0.002 | 0.000 | 0.003 | 0.018 | 0.000 | 0.001 | 4.076 | 0.006 | 0.036 | 0.033 | 0.003 | 0.024 | 0.020 | 1.637 | 0.000 | 0.000 | 0.937 | 0.001 | 0.016 | 0.027 | 0.001 | 0.042 | 0.071 | 0.028 | 2.520 | 77.713 | 0.017 | 0.233 | 0.000 | 0.344 |
| **3** | 0.000 | 0.001 | 0.013 | 0.022 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.005 | 0.000 | 0.001 | 1.615 | 0.004 | 0.023 | 0.006 | 0.001 | 0.017 | 0.011 | 0.237 | 0.000 | 0.000 | 0.142 | 0.000 | 0.004 | 0.004 | 0.000 | 0.010 | 0.009 | 0.005 | 0.608 | 18.902 | 0.004 | 0.046 | 0.000 | 0.084 |
| **4** | 0.000 | 0.000 | 0.003 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.427 | 0.000 | 0.002 | 0.003 | 0.000 | 0.001 | 0.002 | 0.113 | 0.000 | 0.000 | 0.059 | 0.000 | 0.001 | 0.002 | 0.000 | 0.002 | 0.005 | 0.003 | 0.185 | 5.995 | 0.001 | 0.016 | 0.000 | 0.034 |
| **5** | 0.000 | 0.001 | 0.011 | 0.025 | 0.000 | 0.001 | 0.001 | 0.000 | 0.002 | 0.011 | 0.000 | 0.000 | 2.283 | 0.002 | 0.011 | 0.018 | 0.001 | 0.008 | 0.010 | 0.685 | 0.000 | 0.000 | 0.317 | 0.000 | 0.008 | 0.013 | 0.001 | 0.011 | 0.036 | 0.015 | 0.766 | 23.292 | 0.007 | 0.060 | 0.000 | 0.175 |
| **6** | 0.000 | 0.000 | 0.003 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.516 | 0.010 | 0.022 | 0.003 | 0.000 | 0.027 | 0.003 | 0.253 | 0.000 | 0.000 | 0.150 | 0.000 | 0.003 | 0.005 | 0.001 | 0.005 | 0.011 | 0.003 | 0.206 | 3.987 | 0.003 | 0.023 | 0.000 | 0.046 |
| **7** | 0.001 | 0.006 | 0.066 | 0.132 | 0.000 | 0.005 | 0.006 | 0.000 | 0.003 | 0.018 | 0.000 | 0.002 | 3.702 | 0.014 | 0.080 | 0.036 | 0.006 | 0.063 | 0.029 | 3.546 | 0.001 | 0.000 | 2.349 | 0.002 | 0.043 | 0.065 | 0.001 | 0.079 | 0.118 | 0.024 | 3.935 | 109.994 | 0.023 | 0.459 | 0.000 | 0.656 |
| **8** | 0.003 | 0.017 | 0.206 | 0.395 | 0.000 | 0.014 | 0.015 | 0.000 | 0.009 | 0.053 | 0.000 | 0.014 | 14.654 | 0.264 | 1.018 | 0.088 | 0.015 | 0.976 | 0.148 | 7.048 | 0.015 | 0.000 | 4.814 | 0.005 | 0.121 | 0.135 | 0.009 | 0.225 | 0.192 | 0.065 | 10.675 | 315.859 | 0.069 | 1.117 | 0.001 | 1.912 |
| **9** | 0.001 | 0.008 | 0.074 | 0.159 | 0.000 | 0.005 | 0.006 | 0.000 | 0.006 | 0.035 | 0.000 | 0.003 | 7.734 | 0.015 | 0.082 | 0.059 | 0.006 | 0.062 | 0.044 | 3.101 | 0.001 | 0.000 | 1.850 | 0.002 | 0.048 | 0.063 | 0.003 | 0.074 | 0.117 | 0.046 | 4.201 | 133.277 | 0.029 | 0.383 | 0.000 | 0.846 |
| **10** | 0.000 | 0.001 | 0.007 | 0.015 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.006 | 0.000 | 0.000 | 1.154 | 0.006 | 0.024 | 0.008 | 0.001 | 0.021 | 0.007 | 0.415 | 0.000 | 0.000 | 0.242 | 0.000 | 0.008 | 0.010 | 0.001 | 0.010 | 0.016 | 0.007 | 0.464 | 13.573 | 0.004 | 0.037 | 0.000 | 0.119 |
| **11** | 0.002 | 0.011 | 0.091 | 0.124 | 0.000 | 0.007 | 0.012 | 0.000 | 0.005 | 0.027 | 0.000 | 0.002 | 6.197 | 0.019 | 0.107 | 0.054 | 0.016 | 0.100 | 0.043 | 8.434 | 0.001 | 0.000 | 5.879 | 0.002 | 0.133 | 0.164 | 0.002 | 0.117 | 0.222 | 0.040 | 6.379 | 128.572 | 0.039 | 0.991 | 0.000 | 1.535 |
| **12** | 0.003 | 0.018 | 0.162 | 0.235 | 0.000 | 0.012 | 0.015 | 0.000 | 0.006 | 0.026 | 0.000 | 0.005 | 5.916 | 0.057 | 0.290 | 0.083 | 0.027 | 0.292 | 0.086 | 12.841 | 0.003 | 0.000 | 8.492 | 0.003 | 0.153 | 0.245 | 0.002 | 0.241 | 0.299 | 0.035 | 11.424 | 211.260 | 0.055 | 1.901 | 0.001 | 2.090 |
| **13** | 0.003 | 0.018 | 0.273 | 0.182 | 0.000 | 0.010 | 0.014 | 0.000 | 0.009 | 0.086 | 0.000 | 0.025 | 95.761 | 0.202 | 0.992 | 0.080 | 0.017 | 1.120 | 0.602 | 3.900 | 0.011 | 0.000 | 2.284 | 0.002 | 0.101 | 0.065 | 0.009 | 0.194 | 0.136 | 0.090 | 12.233 | 224.631 | 0.111 | 1.021 | 0.000 | 1.892 |
| **14** | 0.009 | 0.049 | 0.502 | 0.493 | 0.001 | 0.026 | 0.038 | 0.000 | 0.027 | 0.243 | 0.001 | 0.021 | 86.134 | 0.215 | 1.022 | 0.321 | 0.059 | 1.099 | 0.480 | 17.954 | 0.011 | 0.000 | 10.280 | 0.007 | 0.381 | 0.315 | 0.018 | 0.503 | 0.665 | 0.326 | 31.855 | 628.336 | 0.288 | 3.330 | 0.001 | 5.767 |
| **15** | 0.008 | 0.039 | 0.453 | 0.469 | 0.001 | 0.022 | 0.024 | 0.000 | 0.017 | 0.236 | 0.000 | 0.020 | 32.395 | 0.745 | 2.585 | 0.254 | 0.062 | 2.759 | 0.299 | 35.541 | 0.041 | 0.001 | 21.979 | 0.040 | 0.294 | 0.509 | 0.038 | 1.086 | 2.080 | 0.198 | 31.182 | 559.607 | 0.241 | 4.137 | 0.001 | 3.849 |
| **16** | 0.002 | 0.011 | 0.082 | 0.183 | 0.000 | 0.008 | 0.018 | 0.000 | 0.004 | 0.024 | 0.000 | 0.004 | 5.122 | 0.091 | 0.410 | 0.084 | 0.014 | 0.409 | 0.068 | 11.632 | 0.006 | 0.001 | 7.273 | 0.019 | 0.125 | 0.430 | 0.007 | 0.268 | 0.497 | 0.030 | 7.767 | 167.830 | 0.045 | 1.049 | 0.001 | 1.937 |
| **17** | 0.003 | 0.019 | 0.149 | 0.182 | 0.000 | 0.010 | 0.014 | 0.000 | 0.011 | 0.052 | 0.000 | 0.005 | 24.912 | 0.038 | 0.194 | 0.102 | 0.021 | 0.211 | 0.131 | 5.522 | 0.002 | 0.000 | 3.535 | 0.001 | 0.120 | 0.104 | 0.003 | 0.107 | 0.181 | 0.088 | 9.335 | 210.685 | 0.068 | 1.267 | 0.001 | 2.036 |
| **18** | 0.001 | 0.005 | 0.027 | 0.070 | 0.000 | 0.003 | 0.005 | 0.000 | 0.003 | 0.007 | 0.000 | 0.000 | 1.765 | 0.004 | 0.019 | 0.042 | 0.006 | 0.016 | 0.010 | 4.596 | 0.000 | 0.000 | 2.701 | 0.001 | 0.045 | 0.105 | 0.000 | 0.031 | 0.126 | 0.018 | 2.542 | 65.223 | 0.015 | 0.448 | 0.000 | 0.632 |
| **19** | 0.001 | 0.006 | 0.073 | 0.062 | 0.000 | 0.003 | 0.003 | 0.000 | 0.004 | 0.059 | 0.000 | 0.005 | 18.145 | 0.120 | 0.407 | 0.059 | 0.008 | 0.490 | 0.100 | 2.279 | 0.006 | 0.000 | 1.092 | 0.001 | 0.030 | 0.033 | 0.007 | 0.090 | 0.120 | 0.070 | 4.927 | 92.821 | 0.059 | 0.431 | 0.000 | 0.553 |
| **20** | 0.003 | 0.015 | 0.127 | 0.216 | 0.000 | 0.008 | 0.011 | 0.000 | 0.017 | 0.101 | 0.000 | 0.011 | 35.787 | 0.290 | 0.894 | 0.184 | 0.014 | 0.755 | 0.149 | 7.785 | 0.012 | 0.000 | 3.679 | 0.004 | 0.124 | 0.161 | 0.016 | 0.215 | 0.286 | 0.121 | 9.219 | 258.171 | 0.148 | 0.938 | 0.001 | 1.929 |
| **21** | 0.001 | 0.006 | 0.044 | 0.099 | 0.000 | 0.004 | 0.008 | 0.000 | 0.003 | 0.016 | 0.000 | 0.001 | 4.565 | 0.009 | 0.058 | 0.060 | 0.007 | 0.045 | 0.034 | 4.443 | 0.000 | 0.000 | 2.725 | 0.002 | 0.062 | 0.175 | 0.002 | 0.100 | 0.166 | 0.025 | 4.158 | 96.230 | 0.028 | 0.534 | 0.000 | 1.072 |
| **22** | 0.002 | 0.009 | 0.049 | 0.123 | 0.000 | 0.006 | 0.010 | 0.000 | 0.004 | 0.013 | 0.000 | 0.001 | 5.747 | 0.006 | 0.033 | 0.095 | 0.010 | 0.027 | 0.028 | 5.081 | 0.000 | 0.000 | 2.927 | 0.001 | 0.061 | 0.148 | 0.001 | 0.074 | 0.165 | 0.043 | 5.127 | 106.021 | 0.036 | 0.732 | 0.001 | 1.191 |
| **23** | 0.002 | 0.012 | 0.086 | 0.192 | 0.000 | 0.008 | 0.014 | 0.000 | 0.005 | 0.029 | 0.000 | 0.002 | 8.647 | 0.019 | 0.118 | 0.121 | 0.014 | 0.094 | 0.064 | 9.731 | 0.001 | 0.000 | 6.174 | 0.004 | 0.093 | 0.326 | 0.004 | 0.187 | 0.435 | 0.053 | 8.194 | 189.002 | 0.054 | 1.068 | 0.001 | 1.730 |
| **24** | 0.000 | 0.002 | 0.012 | 0.026 | 0.000 | 0.001 | 0.003 | 0.000 | 0.001 | 0.005 | 0.000 | 0.000 | 1.196 | 0.003 | 0.020 | 0.016 | 0.002 | 0.014 | 0.010 | 1.424 | 0.000 | 0.000 | 0.921 | 0.001 | 0.014 | 0.046 | 0.001 | 0.033 | 0.065 | 0.007 | 1.110 | 25.256 | 0.008 | 0.147 | 0.000 | 0.251 |
| **25** | 0.000 | 0.001 | 0.013 | 0.022 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.005 | 0.000 | 0.000 | 1.680 | 0.003 | 0.017 | 0.013 | 0.001 | 0.012 | 0.007 | 0.840 | 0.000 | 0.000 | 0.433 | 0.000 | 0.007 | 0.017 | 0.001 | 0.020 | 0.037 | 0.007 | 0.946 | 21.282 | 0.007 | 0.115 | 0.000 | 0.125 |
| **26** | 0.001 | 0.003 | 0.016 | 0.037 | 0.000 | 0.002 | 0.003 | 0.000 | 0.001 | 0.007 | 0.000 | 0.000 | 1.719 | 0.006 | 0.029 | 0.030 | 0.003 | 0.024 | 0.013 | 2.503 | 0.000 | 0.000 | 1.511 | 0.001 | 0.023 | 0.074 | 0.001 | 0.051 | 0.104 | 0.012 | 1.706 | 32.664 | 0.014 | 0.257 | 0.000 | 0.362 |
| **27** | 0.000 | 0.000 | 0.002 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.261 | 0.000 | 0.001 | 0.002 | 0.000 | 0.001 | 0.001 | 0.106 | 0.000 | 0.000 | 0.059 | 0.000 | 0.001 | 0.002 | 0.000 | 0.002 | 0.003 | 0.001 | 0.142 | 3.549 | 0.001 | 0.018 | 0.000 | 0.023 |
| **28** | 0.000 | 0.000 | 0.005 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.627 | 0.002 | 0.010 | 0.004 | 0.000 | 0.007 | 0.003 | 0.245 | 0.000 | 0.000 | 0.122 | 0.000 | 0.002 | 0.005 | 0.000 | 0.007 | 0.010 | 0.002 | 0.320 | 7.420 | 0.002 | 0.036 | 0.000 | 0.040 |
| **29** | 0.000 | 0.001 | 0.014 | 0.021 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.008 | 0.000 | 0.001 | 2.185 | 0.014 | 0.053 | 0.013 | 0.001 | 0.039 | 0.010 | 0.758 | 0.001 | 0.000 | 0.369 | 0.001 | 0.008 | 0.016 | 0.001 | 0.024 | 0.035 | 0.008 | 0.939 | 22.041 | 0.009 | 0.098 | 0.000 | 0.126 |
| **30** | 0.000 | 0.001 | 0.010 | 0.015 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.005 | 0.000 | 0.000 | 1.771 | 0.003 | 0.014 | 0.011 | 0.001 | 0.010 | 0.007 | 0.498 | 0.000 | 0.000 | 0.237 | 0.000 | 0.005 | 0.010 | 0.000 | 0.013 | 0.023 | 0.006 | 0.706 | 15.815 | 0.006 | 0.074 | 0.000 | 0.093 |
| **31** | 0.000 | 0.002 | 0.013 | 0.023 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.005 | 0.000 | 0.000 | 1.298 | 0.006 | 0.031 | 0.015 | 0.002 | 0.025 | 0.011 | 0.973 | 0.000 | 0.000 | 0.539 | 0.001 | 0.008 | 0.022 | 0.001 | 0.036 | 0.042 | 0.007 | 1.157 | 18.868 | 0.010 | 0.153 | 0.000 | 0.149 |
| **32** | 0.000 | 0.002 | 0.015 | 0.029 | 0.000 | 0.001 | 0.002 | 0.000 | 0.001 | 0.006 | 0.000 | 0.000 | 1.653 | 0.004 | 0.023 | 0.019 | 0.002 | 0.016 | 0.009 | 1.438 | 0.000 | 0.000 | 0.800 | 0.001 | 0.018 | 0.037 | 0.001 | 0.034 | 0.051 | 0.009 | 1.254 | 28.864 | 0.012 | 0.166 | 0.000 | 0.255 |
| **33** | 0.000 | 0.001 | 0.004 | 0.011 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.418 | 0.000 | 0.003 | 0.006 | 0.001 | 0.002 | 0.002 | 0.363 | 0.000 | 0.000 | 0.258 | 0.000 | 0.005 | 0.012 | 0.000 | 0.006 | 0.011 | 0.003 | 0.404 | 10.276 | 0.002 | 0.060 | 0.000 | 0.096 |
| **34** | 0.000 | 0.003 | 0.015 | 0.033 | 0.000 | 0.001 | 0.003 | 0.000 | 0.002 | 0.012 | 0.000 | 0.001 | 3.552 | 0.003 | 0.021 | 0.043 | 0.003 | 0.017 | 0.022 | 1.613 | 0.000 | 0.000 | 0.876 | 0.001 | 0.019 | 0.050 | 0.002 | 0.031 | 0.083 | 0.017 | 1.572 | 36.663 | 0.016 | 0.172 | 0.000 | 0.418 |
| **35** | 0.001 | 0.004 | 0.043 | 0.071 | 0.000 | 0.003 | 0.003 | 0.000 | 0.002 | 0.015 | 0.000 | 0.002 | 6.038 | 0.019 | 0.111 | 0.041 | 0.004 | 0.093 | 0.052 | 1.357 | 0.001 | 0.000 | 0.771 | 0.001 | 0.016 | 0.038 | 0.003 | 0.074 | 0.063 | 0.021 | 3.306 | 74.688 | 0.026 | 0.331 | 0.000 | 0.461 |
| **36** | 0.000 | 0.001 | 0.005 | 0.011 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.004 | 0.000 | 0.000 | 1.288 | 0.001 | 0.005 | 0.017 | 0.001 | 0.004 | 0.006 | 0.565 | 0.000 | 0.000 | 0.305 | 0.000 | 0.006 | 0.018 | 0.000 | 0.008 | 0.027 | 0.007 | 0.540 | 12.540 | 0.006 | 0.059 | 0.000 | 0.144 |
| **37** | 0.000 | 0.001 | 0.005 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.506 | 0.001 | 0.005 | 0.006 | 0.001 | 0.004 | 0.003 | 0.286 | 0.000 | 0.000 | 0.182 | 0.000 | 0.003 | 0.009 | 0.000 | 0.008 | 0.012 | 0.003 | 0.425 | 10.207 | 0.003 | 0.055 | 0.000 | 0.068 |
| **38** | 0.000 | 0.002 | 0.016 | 0.026 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.006 | 0.000 | 0.001 | 3.079 | 0.005 | 0.032 | 0.017 | 0.001 | 0.027 | 0.022 | 0.449 | 0.000 | 0.000 | 0.252 | 0.000 | 0.006 | 0.012 | 0.001 | 0.023 | 0.021 | 0.009 | 1.225 | 27.664 | 0.010 | 0.113 | 0.000 | 0.186 |
| **39** | 0.000 | 0.003 | 0.018 | 0.040 | 0.000 | 0.001 | 0.002 | 0.000 | 0.003 | 0.015 | 0.000 | 0.001 | 4.361 | 0.005 | 0.023 | 0.031 | 0.003 | 0.015 | 0.017 | 1.363 | 0.000 | 0.000 | 0.592 | 0.000 | 0.013 | 0.030 | 0.001 | 0.022 | 0.057 | 0.039 | 1.947 | 42.700 | 0.023 | 0.163 | 0.000 | 0.341 |
| **40** | 0.000 | 0.002 | 0.022 | 0.039 | 0.000 | 0.001 | 0.001 | 0.000 | 0.002 | 0.010 | 0.000 | 0.001 | 3.786 | 0.009 | 0.040 | 0.018 | 0.002 | 0.024 | 0.017 | 0.742 | 0.000 | 0.000 | 0.347 | 0.000 | 0.008 | 0.013 | 0.001 | 0.022 | 0.022 | 0.020 | 1.707 | 37.135 | 0.015 | 0.138 | 0.000 | 0.217 |
| **41** | 0.000 | 0.001 | 0.004 | 0.010 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.419 | 0.001 | 0.003 | 0.004 | 0.000 | 0.002 | 0.002 | 0.257 | 0.000 | 0.000 | 0.135 | 0.000 | 0.002 | 0.005 | 0.000 | 0.004 | 0.009 | 0.004 | 0.357 | 8.239 | 0.003 | 0.038 | 0.000 | 0.051 |
| **42** | 0.001 | 0.005 | 0.037 | 0.058 | 0.000 | 0.002 | 0.004 | 0.000 | 0.008 | 0.035 | 0.000 | 0.004 | 28.121 | 0.030 | 0.125 | 0.043 | 0.004 | 0.098 | 0.133 | 1.134 | 0.001 | 0.000 | 0.462 | 0.001 | 0.024 | 0.027 | 0.004 | 0.029 | 0.048 | 0.056 | 3.055 | 67.885 | 0.049 | 0.172 | 0.000 | 0.712 |
| **43** | 0.003 | 0.019 | 0.098 | 0.267 | 0.000 | 0.009 | 0.013 | 0.000 | 0.019 | 0.069 | 0.000 | 0.002 | 11.044 | 0.014 | 0.067 | 0.162 | 0.016 | 0.038 | 0.046 | 8.245 | 0.000 | 0.000 | 4.088 | 0.003 | 0.097 | 0.178 | 0.004 | 0.124 | 0.275 | 0.151 | 10.708 | 255.591 | 0.102 | 1.103 | 0.001 | 2.087 |
| **44** | 0.000 | 0.001 | 0.009 | 0.013 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.000 | 0.001 | 4.180 | 0.006 | 0.027 | 0.004 | 0.000 | 0.017 | 0.018 | 0.136 | 0.000 | 0.000 | 0.073 | 0.000 | 0.003 | 0.003 | 0.000 | 0.005 | 0.004 | 0.006 | 0.568 | 12.097 | 0.005 | 0.036 | 0.000 | 0.078 |
| **45** | 0.000 | 0.002 | 0.015 | 0.035 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.007 | 0.000 | 0.001 | 1.732 | 0.005 | 0.023 | 0.014 | 0.002 | 0.013 | 0.009 | 0.999 | 0.000 | 0.000 | 0.513 | 0.000 | 0.009 | 0.020 | 0.001 | 0.019 | 0.035 | 0.015 | 1.405 | 31.018 | 0.011 | 0.134 | 0.000 | 0.189 |
| **46** | 0.000 | 0.001 | 0.006 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.911 | 0.004 | 0.016 | 0.005 | 0.000 | 0.013 | 0.004 | 0.247 | 0.000 | 0.000 | 0.113 | 0.000 | 0.002 | 0.004 | 0.000 | 0.008 | 0.011 | 0.003 | 0.381 | 8.587 | 0.003 | 0.039 | 0.000 | 0.042 |
| **47** | 0.000 | 0.000 | 0.003 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.634 | 0.002 | 0.007 | 0.003 | 0.000 | 0.005 | 0.003 | 0.146 | 0.000 | 0.000 | 0.068 | 0.000 | 0.001 | 0.003 | 0.000 | 0.004 | 0.006 | 0.002 | 0.233 | 5.202 | 0.002 | 0.023 | 0.000 | 0.029 |
| **48** | 0.000 | 0.000 | 0.003 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.420 | 0.001 | 0.005 | 0.002 | 0.000 | 0.004 | 0.002 | 0.118 | 0.000 | 0.000 | 0.055 | 0.000 | 0.001 | 0.002 | 0.000 | 0.004 | 0.005 | 0.001 | 0.176 | 3.950 | 0.001 | 0.018 | 0.000 | 0.021 |
| **49** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.047 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 | 0.000 | 0.000 | 0.007 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.010 | 0.206 | 0.000 | 0.001 | 0.000 | 0.003 |
| **50** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.023 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.013 | 0.000 | 0.000 | 0.007 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.061 | 0.000 | 0.000 | 0.000 | 0.002 |
| **51** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.089 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.042 | 0.000 | 0.000 | 0.025 | 0.000 | 0.001 | 0.002 | 0.000 | 0.000 | 0.001 | 0.000 | 0.014 | 0.305 | 0.000 | 0.001 | 0.000 | 0.009 |
| **52** | 0.004 | 0.029 | 0.048 | 0.218 | 0.000 | 0.017 | 0.041 | 0.000 | 0.013 | 0.009 | 0.000 | 0.001 | 5.262 | 0.004 | 0.023 | 0.066 | 0.038 | 0.023 | 0.020 | 8.254 | 0.000 | 0.000 | 11.642 | 0.000 | 0.298 | 0.248 | 0.000 | 0.024 | 0.075 | 0.038 | 3.764 | 128.746 | 0.016 | 2.207 | 0.002 | 5.767 |
| **53** | 0.001 | 0.003 | 0.016 | 0.044 | 0.000 | 0.002 | 0.004 | 0.000 | 0.003 | 0.005 | 0.000 | 0.000 | 2.141 | 0.001 | 0.007 | 0.027 | 0.003 | 0.004 | 0.005 | 1.996 | 0.000 | 0.000 | 1.479 | 0.000 | 0.037 | 0.058 | 0.000 | 0.015 | 0.041 | 0.014 | 1.266 | 44.452 | 0.011 | 0.234 | 0.000 | 0.462 |
| **54** | 0.000 | 0.000 | 0.002 | 0.004 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.003 | 0.000 | 0.000 | 0.775 | 0.001 | 0.003 | 0.007 | 0.000 | 0.003 | 0.002 | 0.435 | 0.000 | 0.000 | 0.236 | 0.000 | 0.005 | 0.013 | 0.000 | 0.004 | 0.021 | 0.004 | 0.181 | 4.554 | 0.004 | 0.017 | 0.000 | 0.065 |
| **55** | 0.000 | 0.002 | 0.009 | 0.024 | 0.000 | 0.001 | 0.003 | 0.000 | 0.002 | 0.005 | 0.000 | 0.000 | 1.632 | 0.001 | 0.006 | 0.018 | 0.002 | 0.003 | 0.004 | 1.532 | 0.000 | 0.000 | 1.065 | 0.000 | 0.023 | 0.045 | 0.000 | 0.012 | 0.036 | 0.010 | 0.792 | 25.380 | 0.009 | 0.124 | 0.000 | 0.281 |
| **56** | 0.000 | 0.000 | 0.002 | 0.005 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.498 | 0.000 | 0.001 | 0.005 | 0.000 | 0.001 | 0.001 | 0.312 | 0.000 | 0.000 | 0.182 | 0.000 | 0.004 | 0.008 | 0.000 | 0.003 | 0.010 | 0.003 | 0.190 | 5.866 | 0.003 | 0.026 | 0.000 | 0.052 |
| **57** | 0.000 | 0.000 | 0.002 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.006 | 0.000 | 0.000 | 1.363 | 0.002 | 0.006 | 0.011 | 0.001 | 0.006 | 0.004 | 0.456 | 0.000 | 0.000 | 0.168 | 0.000 | 0.004 | 0.011 | 0.001 | 0.004 | 0.034 | 0.007 | 0.242 | 5.533 | 0.007 | 0.016 | 0.000 | 0.063 |
| **58** | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.110 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.067 | 0.000 | 0.000 | 0.045 | 0.000 | 0.001 | 0.003 | 0.000 | 0.000 | 0.001 | 0.001 | 0.023 | 0.591 | 0.000 | 0.002 | 0.000 | 0.016 |

\* The color reflects the level of risk quotients (RQs):

|  |  |
| --- | --- |
| RQs < 0.01 | (no color) |
| 0.01 ≤ RQs < 0.1 | (green) |
| 0.1 ≤ RQs < 1 | (yellow) |
| 1 ≤ RQs < 10 | (reddish) |
| RQs ≥ 10 | (red) |

Table S6 Resistance development risk quotients of antibiotics in the fresh surface waters of China\*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Locations** | **Sulfadiazine** | **Sulfamethoxazole** | **Sulfathiazole** | **Trimethoprim** | **Ormetoprim** | **Oxytetracycline** | **Tetracycline** | **Chlortetracycline** | **Doxycycline** | **Methacycline** | **Norfloxacin** | **Ciprofloxacin** | **Ofloxacin** | **Lomefloxacin** | **Enrofloxacin** | **Fleroxacin** | **Pefloxacin** | **Difloxacin** | **Clarithromycin** | **Roxithromycin** | **Tylosin** | **Cephalexin** | **Amoxicillin** | **Penicillin** | **Florfenicol** | **Chloramphenicol** | **Lincomycin** |
| **1** | **0.002** | **0.012** | **0.000** | **0.127** | **0.000** | **0.001** | **0.004** | **0.000** | **0.009** | **0.032** | **1.064** | **0.051** | **0.009** | **1.135** | **0.007** | **0.111** | **0.148** | **0.209** | **2.096** | **0.065** | **0.028** | **0.055** | **3.137** | **11.362** | **0.275** | **0.095** | **0.396** |
| **2** | 0.002 | 0.019 | 0.000 | 0.124 | 0.000 | 0.006 | 0.023 | 0.001 | 0.037 | 0.021 | 0.669 | 0.255 | 0.047 | 0.318 | 0.036 | 0.013 | 0.040 | 0.095 | 0.578 | 0.088 | 0.021 | 0.055 | 3.185 | 10.844 | 0.174 | 0.059 | 0.359 |
| **3** | 0.000 | 0.006 | 0.000 | 0.032 | 0.000 | 0.004 | 0.009 | 0.001 | 0.024 | 0.004 | 0.128 | 0.178 | 0.025 | 0.046 | 0.026 | 0.001 | 0.006 | 0.021 | 0.089 | 0.034 | 0.005 | 0.010 | 0.768 | 2.638 | 0.034 | 0.012 | 0.088 |
| **4** | 0.000 | 0.001 | 0.000 | 0.011 | 0.000 | 0.000 | 0.002 | 0.000 | 0.002 | 0.002 | 0.054 | 0.012 | 0.004 | 0.022 | 0.002 | 0.001 | 0.003 | 0.005 | 0.042 | 0.006 | 0.001 | 0.005 | 0.234 | 0.836 | 0.012 | 0.004 | 0.036 |
| **5** | 0.001 | 0.005 | 0.000 | 0.079 | 0.000 | 0.002 | 0.013 | 0.000 | 0.011 | 0.011 | 0.248 | 0.089 | 0.024 | 0.133 | 0.011 | 0.007 | 0.014 | 0.032 | 0.291 | 0.058 | 0.006 | 0.029 | 0.968 | 3.250 | 0.045 | 0.025 | 0.183 |
| **6** | 0.000 | 0.001 | 0.000 | 0.022 | 0.000 | 0.001 | 0.003 | 0.002 | 0.022 | 0.002 | 0.095 | 0.280 | 0.007 | 0.049 | 0.062 | 0.003 | 0.006 | 0.029 | 0.117 | 0.039 | 0.003 | 0.006 | 0.261 | 0.556 | 0.017 | 0.008 | 0.048 |
| **7** | 0.003 | 0.029 | 0.000 | 0.127 | 0.000 | 0.010 | 0.021 | 0.002 | 0.082 | 0.023 | 1.355 | 0.667 | 0.068 | 0.690 | 0.099 | 0.025 | 0.100 | 0.223 | 1.413 | 0.102 | 0.039 | 0.046 | 4.974 | 15.348 | 0.343 | 0.109 | 0.684 |
| **8** | 0.007 | 0.091 | 0.001 | 0.375 | 0.000 | 0.073 | 0.082 | 0.042 | 1.040 | 0.056 | 3.294 | 10.269 | 0.349 | 1.371 | 2.018 | 0.035 | 0.206 | 0.657 | 2.926 | 0.600 | 0.110 | 0.126 | 13.493 | 44.073 | 0.836 | 0.294 | 1.995 |
| **9** | 0.003 | 0.033 | 0.000 | 0.243 | 0.000 | 0.013 | 0.043 | 0.002 | 0.084 | 0.037 | 1.265 | 0.654 | 0.104 | 0.603 | 0.094 | 0.022 | 0.079 | 0.202 | 1.366 | 0.191 | 0.036 | 0.088 | 5.310 | 18.597 | 0.286 | 0.121 | 0.882 |
| **10** | 0.000 | 0.003 | 0.000 | 0.041 | 0.000 | 0.002 | 0.006 | 0.001 | 0.025 | 0.005 | 0.153 | 0.222 | 0.018 | 0.081 | 0.035 | 0.003 | 0.010 | 0.042 | 0.215 | 0.056 | 0.005 | 0.013 | 0.586 | 1.894 | 0.028 | 0.017 | 0.124 |
| **11** | 0.005 | 0.040 | 0.000 | 0.192 | 0.000 | 0.011 | 0.035 | 0.003 | 0.109 | 0.035 | 3.468 | 1.055 | 0.102 | 1.641 | 0.140 | 0.058 | 0.251 | 0.261 | 3.552 | 0.115 | 0.057 | 0.076 | 8.063 | 17.940 | 0.742 | 0.213 | 1.601 |
| **12** | 0.009 | 0.071 | 0.000 | 0.179 | 0.000 | 0.025 | 0.033 | 0.009 | 0.297 | 0.053 | 5.734 | 3.074 | 0.202 | 2.498 | 0.416 | 0.083 | 0.363 | 0.422 | 5.290 | 0.171 | 0.118 | 0.068 | 14.440 | 29.478 | 1.422 | 0.370 | 2.181 |
| **13** | 0.008 | 0.121 | 0.000 | 0.604 | 0.000 | 0.133 | 0.538 | 0.032 | 1.013 | 0.050 | 3.584 | 11.792 | 1.417 | 0.759 | 1.468 | 0.020 | 0.098 | 0.302 | 1.400 | 0.597 | 0.095 | 0.174 | 15.462 | 31.344 | 0.764 | 0.180 | 1.974 |
| **14** | 0.023 | 0.221 | 0.001 | 1.707 | 0.001 | 0.111 | 0.484 | 0.034 | 1.044 | 0.204 | 12.772 | 11.571 | 1.129 | 3.493 | 1.468 | 0.116 | 0.440 | 0.912 | 6.820 | 1.239 | 0.246 | 0.630 | 40.265 | 87.675 | 2.491 | 0.648 | 6.017 |
| **15** | 0.019 | 0.200 | 0.001 | 1.655 | 0.000 | 0.103 | 0.182 | 0.120 | 2.640 | 0.162 | 13.387 | 29.047 | 0.704 | 6.915 | 5.520 | 0.793 | 0.940 | 4.946 | 11.009 | 2.609 | 0.532 | 0.382 | 39.414 | 78.085 | 3.095 | 0.577 | 4.016 |
| **16** | 0.005 | 0.036 | 0.000 | 0.172 | 0.000 | 0.022 | 0.029 | 0.015 | 0.419 | 0.053 | 2.956 | 4.310 | 0.160 | 2.263 | 0.811 | 0.424 | 0.311 | 2.355 | 9.297 | 0.512 | 0.131 | 0.057 | 9.817 | 23.418 | 0.785 | 0.355 | 2.021 |
| **17** | 0.008 | 0.066 | 0.000 | 0.363 | 0.000 | 0.026 | 0.140 | 0.006 | 0.198 | 0.065 | 4.440 | 2.217 | 0.308 | 1.074 | 0.274 | 0.034 | 0.151 | 0.155 | 2.241 | 0.214 | 0.053 | 0.169 | 11.799 | 29.398 | 0.948 | 0.266 | 2.124 |
| **18** | 0.002 | 0.012 | 0.000 | 0.046 | 0.000 | 0.002 | 0.010 | 0.001 | 0.020 | 0.026 | 1.402 | 0.170 | 0.023 | 0.894 | 0.024 | 0.050 | 0.116 | 0.090 | 2.266 | 0.034 | 0.015 | 0.035 | 3.213 | 9.101 | 0.335 | 0.121 | 0.659 |
| **19** | 0.003 | 0.032 | 0.000 | 0.413 | 0.000 | 0.026 | 0.102 | 0.019 | 0.415 | 0.037 | 1.747 | 5.162 | 0.235 | 0.443 | 0.745 | 0.020 | 0.047 | 0.143 | 0.724 | 0.466 | 0.044 | 0.135 | 6.228 | 12.952 | 0.322 | 0.061 | 0.577 |
| **20** | 0.007 | 0.056 | 0.000 | 0.707 | 0.000 | 0.058 | 0.201 | 0.046 | 0.913 | 0.117 | 3.061 | 7.944 | 0.350 | 1.515 | 1.605 | 0.064 | 0.157 | 0.546 | 3.474 | 1.134 | 0.105 | 0.234 | 11.653 | 36.024 | 0.702 | 0.275 | 2.013 |
| **21** | 0.003 | 0.020 | 0.000 | 0.110 | 0.000 | 0.007 | 0.026 | 0.001 | 0.060 | 0.038 | 1.571 | 0.477 | 0.080 | 0.864 | 0.064 | 0.054 | 0.117 | 0.224 | 3.784 | 0.142 | 0.049 | 0.048 | 5.256 | 13.427 | 0.400 | 0.183 | 1.119 |
| **22** | 0.004 | 0.022 | 0.000 | 0.092 | 0.000 | 0.004 | 0.032 | 0.001 | 0.034 | 0.060 | 2.176 | 0.281 | 0.065 | 0.988 | 0.032 | 0.043 | 0.125 | 0.136 | 3.206 | 0.090 | 0.036 | 0.082 | 6.481 | 14.794 | 0.547 | 0.234 | 1.242 |
| **23** | 0.006 | 0.038 | 0.000 | 0.207 | 0.000 | 0.013 | 0.049 | 0.003 | 0.121 | 0.077 | 2.945 | 0.994 | 0.150 | 1.893 | 0.135 | 0.195 | 0.264 | 0.509 | 7.044 | 0.268 | 0.092 | 0.102 | 10.357 | 26.372 | 0.799 | 0.339 | 1.805 |
| **24** | 0.001 | 0.005 | 0.000 | 0.035 | 0.000 | 0.002 | 0.007 | 0.000 | 0.020 | 0.010 | 0.419 | 0.151 | 0.022 | 0.277 | 0.020 | 0.031 | 0.039 | 0.092 | 0.991 | 0.052 | 0.016 | 0.013 | 1.403 | 3.524 | 0.110 | 0.044 | 0.262 |
| **25** | 0.001 | 0.006 | 0.000 | 0.038 | 0.000 | 0.002 | 0.009 | 0.001 | 0.017 | 0.008 | 0.276 | 0.125 | 0.017 | 0.163 | 0.021 | 0.010 | 0.018 | 0.049 | 0.376 | 0.037 | 0.010 | 0.013 | 1.195 | 2.970 | 0.086 | 0.025 | 0.131 |
| **26** | 0.001 | 0.007 | 0.000 | 0.051 | 0.000 | 0.003 | 0.010 | 0.001 | 0.029 | 0.019 | 0.731 | 0.256 | 0.031 | 0.487 | 0.031 | 0.031 | 0.065 | 0.126 | 1.590 | 0.076 | 0.025 | 0.024 | 2.157 | 4.558 | 0.192 | 0.082 | 0.378 |
| **27** | 0.000 | 0.001 | 0.000 | 0.004 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.001 | 0.043 | 0.007 | 0.002 | 0.021 | 0.001 | 0.001 | 0.003 | 0.003 | 0.052 | 0.002 | 0.001 | 0.002 | 0.179 | 0.495 | 0.014 | 0.004 | 0.024 |
| **28** | 0.000 | 0.002 | 0.000 | 0.014 | 0.000 | 0.001 | 0.004 | 0.000 | 0.010 | 0.003 | 0.082 | 0.071 | 0.007 | 0.048 | 0.014 | 0.003 | 0.005 | 0.020 | 0.104 | 0.018 | 0.004 | 0.004 | 0.404 | 1.035 | 0.027 | 0.007 | 0.042 |
| **29** | 0.001 | 0.006 | 0.000 | 0.054 | 0.000 | 0.004 | 0.012 | 0.002 | 0.054 | 0.009 | 0.246 | 0.413 | 0.024 | 0.147 | 0.087 | 0.009 | 0.016 | 0.087 | 0.335 | 0.092 | 0.012 | 0.015 | 1.186 | 3.076 | 0.073 | 0.023 | 0.132 |
| **30** | 0.000 | 0.004 | 0.000 | 0.035 | 0.000 | 0.002 | 0.010 | 0.000 | 0.014 | 0.007 | 0.191 | 0.101 | 0.015 | 0.097 | 0.017 | 0.006 | 0.010 | 0.029 | 0.217 | 0.034 | 0.007 | 0.012 | 0.893 | 2.207 | 0.055 | 0.016 | 0.097 |
| **31** | 0.001 | 0.006 | 0.000 | 0.032 | 0.000 | 0.002 | 0.007 | 0.001 | 0.031 | 0.010 | 0.390 | 0.266 | 0.026 | 0.189 | 0.031 | 0.009 | 0.023 | 0.067 | 0.484 | 0.060 | 0.017 | 0.014 | 1.463 | 2.633 | 0.114 | 0.040 | 0.155 |
| **32** | 0.001 | 0.007 | 0.000 | 0.040 | 0.000 | 0.003 | 0.009 | 0.001 | 0.023 | 0.012 | 0.472 | 0.167 | 0.022 | 0.280 | 0.022 | 0.013 | 0.034 | 0.080 | 0.799 | 0.047 | 0.017 | 0.018 | 1.586 | 4.028 | 0.124 | 0.048 | 0.266 |
| **33** | 0.000 | 0.002 | 0.000 | 0.007 | 0.000 | 0.000 | 0.002 | 0.000 | 0.003 | 0.004 | 0.158 | 0.020 | 0.005 | 0.071 | 0.003 | 0.003 | 0.011 | 0.008 | 0.263 | 0.006 | 0.003 | 0.005 | 0.511 | 1.434 | 0.045 | 0.019 | 0.100 |
| **34** | 0.001 | 0.007 | 0.000 | 0.082 | 0.000 | 0.003 | 0.020 | 0.001 | 0.021 | 0.027 | 0.628 | 0.174 | 0.051 | 0.314 | 0.021 | 0.025 | 0.037 | 0.067 | 1.088 | 0.105 | 0.015 | 0.033 | 1.987 | 5.116 | 0.128 | 0.059 | 0.436 |
| **35** | 0.002 | 0.019 | 0.000 | 0.108 | 0.000 | 0.011 | 0.034 | 0.003 | 0.113 | 0.026 | 0.839 | 0.977 | 0.122 | 0.264 | 0.132 | 0.012 | 0.033 | 0.101 | 0.818 | 0.192 | 0.036 | 0.040 | 4.179 | 10.422 | 0.247 | 0.085 | 0.481 |
| **36** | 0.000 | 0.002 | 0.000 | 0.025 | 0.000 | 0.001 | 0.007 | 0.000 | 0.005 | 0.011 | 0.231 | 0.041 | 0.015 | 0.110 | 0.005 | 0.009 | 0.013 | 0.014 | 0.391 | 0.025 | 0.004 | 0.014 | 0.683 | 1.750 | 0.044 | 0.021 | 0.150 |
| **37** | 0.000 | 0.002 | 0.000 | 0.010 | 0.000 | 0.001 | 0.003 | 0.000 | 0.005 | 0.004 | 0.135 | 0.037 | 0.008 | 0.056 | 0.005 | 0.003 | 0.008 | 0.010 | 0.185 | 0.011 | 0.004 | 0.005 | 0.537 | 1.424 | 0.041 | 0.015 | 0.071 |
| **38** | 0.001 | 0.007 | 0.000 | 0.042 | 0.000 | 0.004 | 0.017 | 0.001 | 0.033 | 0.011 | 0.306 | 0.282 | 0.051 | 0.087 | 0.036 | 0.004 | 0.011 | 0.028 | 0.269 | 0.065 | 0.011 | 0.018 | 1.548 | 3.860 | 0.085 | 0.031 | 0.194 |
| **39** | 0.001 | 0.008 | 0.000 | 0.105 | 0.000 | 0.003 | 0.025 | 0.001 | 0.023 | 0.020 | 0.606 | 0.159 | 0.040 | 0.265 | 0.020 | 0.014 | 0.025 | 0.049 | 0.642 | 0.072 | 0.011 | 0.075 | 2.461 | 5.958 | 0.122 | 0.043 | 0.355 |
| **40** | 0.001 | 0.010 | 0.000 | 0.069 | 0.000 | 0.005 | 0.021 | 0.001 | 0.041 | 0.011 | 0.376 | 0.251 | 0.041 | 0.144 | 0.041 | 0.005 | 0.015 | 0.048 | 0.286 | 0.065 | 0.011 | 0.038 | 2.158 | 5.182 | 0.103 | 0.031 | 0.226 |
| **41** | 0.000 | 0.002 | 0.000 | 0.010 | 0.000 | 0.000 | 0.002 | 0.000 | 0.003 | 0.003 | 0.103 | 0.018 | 0.004 | 0.050 | 0.003 | 0.002 | 0.006 | 0.008 | 0.111 | 0.006 | 0.002 | 0.008 | 0.451 | 1.150 | 0.029 | 0.009 | 0.053 |
| **42** | 0.002 | 0.016 | 0.000 | 0.245 | 0.000 | 0.020 | 0.158 | 0.005 | 0.128 | 0.027 | 0.778 | 1.029 | 0.313 | 0.221 | 0.125 | 0.009 | 0.020 | 0.073 | 0.591 | 0.271 | 0.014 | 0.109 | 3.861 | 9.472 | 0.129 | 0.052 | 0.743 |
| **43** | 0.007 | 0.043 | 0.001 | 0.487 | 0.000 | 0.009 | 0.062 | 0.002 | 0.069 | 0.103 | 3.523 | 0.400 | 0.109 | 1.604 | 0.057 | 0.068 | 0.175 | 0.314 | 3.846 | 0.296 | 0.061 | 0.291 | 13.535 | 35.664 | 0.825 | 0.296 | 2.178 |
| **44** | 0.000 | 0.004 | 0.000 | 0.018 | 0.000 | 0.005 | 0.023 | 0.001 | 0.027 | 0.002 | 0.096 | 0.177 | 0.043 | 0.026 | 0.028 | 0.001 | 0.003 | 0.010 | 0.064 | 0.019 | 0.003 | 0.011 | 0.718 | 1.688 | 0.027 | 0.009 | 0.082 |
| **45** | 0.001 | 0.007 | 0.000 | 0.048 | 0.000 | 0.003 | 0.010 | 0.001 | 0.024 | 0.009 | 0.367 | 0.133 | 0.021 | 0.194 | 0.022 | 0.008 | 0.022 | 0.055 | 0.426 | 0.039 | 0.009 | 0.030 | 1.775 | 4.328 | 0.100 | 0.029 | 0.197 |
| **46** | 0.000 | 0.003 | 0.000 | 0.018 | 0.000 | 0.002 | 0.005 | 0.001 | 0.017 | 0.003 | 0.093 | 0.139 | 0.010 | 0.048 | 0.029 | 0.003 | 0.005 | 0.019 | 0.091 | 0.024 | 0.004 | 0.006 | 0.481 | 1.198 | 0.029 | 0.007 | 0.043 |
| **47** | 0.000 | 0.002 | 0.000 | 0.012 | 0.000 | 0.001 | 0.004 | 0.000 | 0.008 | 0.002 | 0.058 | 0.056 | 0.006 | 0.028 | 0.010 | 0.001 | 0.003 | 0.011 | 0.062 | 0.014 | 0.002 | 0.004 | 0.294 | 0.726 | 0.017 | 0.005 | 0.031 |
| **48** | 0.000 | 0.001 | 0.000 | 0.008 | 0.000 | 0.001 | 0.002 | 0.000 | 0.005 | 0.002 | 0.044 | 0.038 | 0.004 | 0.023 | 0.007 | 0.001 | 0.002 | 0.009 | 0.047 | 0.010 | 0.002 | 0.003 | 0.222 | 0.551 | 0.013 | 0.003 | 0.021 |
| **49** | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.001 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.001 | 0.011 | 0.001 | 0.000 | 0.000 | 0.013 | 0.029 | 0.001 | 0.000 | 0.003 |
| **50** | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.011 | 0.000 | 0.000 | 0.000 | 0.004 | 0.008 | 0.000 | 0.000 | 0.003 |
| **51** | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.001 | 0.000 | 0.008 | 0.000 | 0.001 | 0.001 | 0.002 | 0.033 | 0.002 | 0.000 | 0.001 | 0.018 | 0.043 | 0.001 | 0.001 | 0.010 |
| **52** | 0.010 | 0.021 | 0.000 | 0.061 | 0.000 | 0.004 | 0.030 | 0.001 | 0.023 | 0.042 | 8.255 | 0.243 | 0.046 | 1.606 | 0.030 | 0.024 | 0.498 | 0.049 | 5.365 | 0.025 | 0.012 | 0.074 | 4.757 | 17.965 | 1.650 | 0.763 | 6.017 |
| **53** | 0.001 | 0.007 | 0.000 | 0.037 | 0.000 | 0.001 | 0.012 | 0.000 | 0.007 | 0.017 | 0.696 | 0.040 | 0.011 | 0.388 | 0.006 | 0.013 | 0.063 | 0.026 | 1.263 | 0.016 | 0.008 | 0.028 | 1.600 | 6.203 | 0.175 | 0.082 | 0.482 |
| **54** | 0.000 | 0.001 | 0.000 | 0.024 | 0.000 | 0.000 | 0.004 | 0.000 | 0.003 | 0.004 | 0.092 | 0.028 | 0.005 | 0.085 | 0.003 | 0.012 | 0.010 | 0.022 | 0.281 | 0.021 | 0.002 | 0.008 | 0.229 | 0.635 | 0.013 | 0.010 | 0.068 |
| **55** | 0.001 | 0.004 | 0.000 | 0.034 | 0.000 | 0.001 | 0.009 | 0.000 | 0.006 | 0.012 | 0.411 | 0.034 | 0.009 | 0.298 | 0.005 | 0.014 | 0.046 | 0.027 | 0.982 | 0.017 | 0.006 | 0.019 | 1.001 | 3.541 | 0.093 | 0.048 | 0.293 |
| **56** | 0.000 | 0.001 | 0.000 | 0.010 | 0.000 | 0.000 | 0.003 | 0.000 | 0.001 | 0.003 | 0.090 | 0.009 | 0.002 | 0.061 | 0.001 | 0.004 | 0.008 | 0.005 | 0.168 | 0.005 | 0.001 | 0.006 | 0.240 | 0.819 | 0.019 | 0.008 | 0.054 |
| **57** | 0.000 | 0.001 | 0.000 | 0.042 | 0.000 | 0.001 | 0.008 | 0.000 | 0.006 | 0.007 | 0.111 | 0.062 | 0.009 | 0.089 | 0.006 | 0.019 | 0.007 | 0.021 | 0.244 | 0.045 | 0.002 | 0.013 | 0.306 | 0.772 | 0.012 | 0.008 | 0.066 |
| **58** | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.020 | 0.001 | 0.000 | 0.013 | 0.000 | 0.001 | 0.002 | 0.001 | 0.062 | 0.001 | 0.000 | 0.001 | 0.029 | 0.082 | 0.002 | 0.003 | 0.016 |

\* The color reflects the level of risk quotients (RQs):

|  |  |
| --- | --- |
| RQs < 0.01 | (no color) |
| 0.01 ≤ RQs < 0.1 | (green) |
| 0.1 ≤ RQs < 1 | (yellow) |
| 1 ≤ RQs < 10 | (reddish) |
| RQs ≥ 10 | (red) |

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