# Description of how each toxicant trigger value was derived

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## Summary of information provided

The following material provides all the necessary information to determine how each toxicant trigger value (TV) was calculated. This is done for each toxicant both for the freshwater and marine environment. The order in which the chemicals appear in this document is the same as that in the tables listing the trigger values in the ANZECC and ARMCANZ water quality guidelines (ANZECC & ARMCANZ 2000). Unless otherwise stated all the TVs are expressed in terms of µg/L.

Within the section on each toxicant the following information is provided. Firstly it states whether the calculations apply for the freshwater or marine environments. Secondly, which grade of reliability the TVs fail to meet and then the grade of reliability that was actually calculated. High reliability, moderate reliability and low reliability were abbreviated to HR, MR and LR respectively. Within the low reliability TVs there are two classes — the interim which is abbreviated as LR (interim) TV and the environmental concern level which is abbreviated as LR (ECL) TV. Immediately following this is the data that were used to calculate the TV or statements about the amount and taxonomic group for which toxicity data were available. What follows this depends on the method used to calculate the TV.

If the Burr III statistical distribution method was used then the next information is the results from these calculations. These state the concentration that should protect 99, 95, 90 and 80% of species in the environment with 50% confidence, which are abbreviated to HC1 50%, HC5 50%, HC10 50% and HC10 50% respectively. This may be followed by some text if the TV is not to be the HC5 50%. This text explains why another level of protection was adopted and what the TV is. Finally, a statement is made indicating whether the TVs were rounded off and if so what the TVs are.

If low reliability TVs were derived then the exact type of LR TV will be stated and how the TV was calculated will be shown. This is followed by the following statement ‘The other levels of protection could not be calculated as the TV was derived using the AF method’. This is done because it is not possible to calculate different levels of protection for these TVs (as could be done for those derived using the Burr type III statistical method). If the TVs were rounded off a statement is made and the rounded off TV is reported.

# Aluminium
## Freshwater
## (pH > 6.5)
### Fails HR
### MR Calculations

| | | | | | |
|---|---|---|---|---|---|
| 1253.57 | 9212.49 | 92086.92 | 8355.22 | 55500 | 35000 |
| 599 | 3600 | 512.05 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 219.23 |
| HC5 50% | = | 439.97 |
| HC10 50% | = | 673.86 |
| HC20 50% | = | 1203.77 |

**NOTE:** Because this TV is derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all combined species is 8.17.

MR TV = 439.97 ÷ 8.17 = 53.85 = 54 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 26.83 | 53.85 | 82.48 | 147.34 |

These were rounded off to

| | | | |
|---|---|---|---|
| 27 | 55 | 80 | 150 |

## (pH < 6.5)
### Fails HR and MR
### Interim Calculation

| | | |
|---|---|---|
| Interim TV | = | lowest value ÷ AF or ACR |
| | = | 15 ÷ 20 |
| | = | 0.75 µg/L |
| | ≈ | 0.8 µg/L |

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Marine
There were only chronic toxicity data for 1 species. Therefore a HR TV could not be derived.

There were only acute toxicity data for 6 species belonging to 3 taxonomic groups (crustacea, annelida and mollusca). Therefore, a MR TV could not be derived.

When the acute and chronic toxicity data were combined there were data for 7 species belonging to the same 3 taxonomic groups as the acute data. Therefore, an interim TV could not be derived. Only an ECL could be derived.

LR (ECL) TV = lowest value ÷ AF
= 97 ÷ 200
= 0.485
≈ 0.5 µg/L

An AF of 200 was used because the use of an AF of 1000 was considered excessive for such a commonly found element.

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Antimony
## Freshwater
### Fails HR and MR

There were toxicity data for 3 species which belonged to 3 taxonomic groups (fish, crustacea and annelida).

Therefore Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 9000 µg/L ÷ 1000
= 9 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine
There were only toxicity data for three marine species which belonged to two different taxonomic groups — fish and crustacea.

Therefore only a LR (ECL) TV could be derived.

The lowest value was not used to derive the ECL as it was markedly different from other values for the same species (i.e. 53.4 compared to 267 000 µg/L). Therefore the next lowest value was used.

LR (ECL) TV = lowest value ÷ 1000
= 267 000 µg/L ÷ 1000
= 267 µg/L
≈ 270 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Arsenic (III)
## Freshwater
## HR Calculations

| | | | | | |
|---|---|---|---|---|---|
| 890 | 6751.14 | 955 | 290.81 | 961 | 9250.92 |
| 961 | 8420 | 417.45 | 4284.89 | 961 | 3823 |
| 15.74 | | | | | |

HC1 50% = 1.05
HC5 50% = 24.21
HC10 50% = 93.52
HC20 50% = 361.21

TV (Burr HC5 50%) = 24

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 1.05 | 24.21 | 93.52 | 361.21 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1 | 24 | 94 | 360 |

## Marine

There were no screened marine toxicity data. However, there were unscreened USEPA data for 12 species — the lowest value being 232 µg/L. Even though there were sufficient data to derive a MR TV a LR (interim) was derived because the data were unscreened.

LR (interim) TV = lowest value ÷ 100
= 232 µg/L ÷ 100
= 2.32 µg/L
≈ 2.3 µg/L

# Arsenic (V)

## Freshwater

## HR Calculations

| | | | | |
|---|---|---|---|---|
| 22.63 | 510.84 | 973 | 973 | 973 |
| 973 | 973 | 9.80 | 7843.60 | 15 886 |

HC1 50% = 0.76
HC5 50% = 12.54
HC10 50% = 42.08
HC20 50% = 143.28

TV (Burr HC5 50%) = 12.45 = 12.5 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.76 | 12.54 | 42.08 | 143.28 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.8 | 13 | 42 | 140 µg/L |

## Marinewater

### Fails HR and MR

The highest level of TV that could be derived was the LR (ECL) TV. There were only pH data for 2 of the 10 data. But it is marine water — the stated pH range is 6.7-8.2.

LR (ECL) TV = lowest value ÷200
= 893 ÷200
= 4.465
≈ 4.5 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

# Bismuth

## Freshwater

### Fails HR and MR

There were only three toxicity data and these were insufficient to derive an interim (LR) TV. Only a LR (ECL) TV could be derived. However, none of the data recorded the pH.

LR (ECL) TV = lowest value ÷ 1000
= 662 ÷ 1000
= 0.7

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine water

There were no marine toxicity data. Therefore no marine TV could be derived.

# Boron

## Freshwater

### HR Calculations

The data used in the calculations were:

| | | | | | |
|---|---|---|---|---|---|
| 6945.5 | 357.77 | 4651.02 | 4665 | 1000 | 10940 |
| 4993.38 | 32244.07 | 22600 | 1323.52 | | |

HC1 50% = 93.60
HC5 50% = 367.5
HC10 50% = 682.4
HC20 50% = 1335

TV (Burr HC5 50%) = 370 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 93.6 | 367.5 | 682.4 | 1335 |

These were rounded off to

| | | | |
|---|---|---|---|
| 90 | 370 | 680 | 1300 µg/L |

## Marine water

There were no toxicity data for marine species. Therefore no TV could be derived.

# Cadmium
## Freshwater
### HR Calculations

The data used in the calculations were:

| | | | | | |
|---|---|---|---|---|---|
| 10.22 | 3.2 | 0.38 | 0.08 | 1.65 | 2.46 |
| 121.68 | 3.31 | 8.2 | 23.21 | 0.83 | 0.52 |
| 474 | 112 | 250.36 | 0.63 | 20.72 | 0.49 |
| 5.72 | 243.8 | 766.88 | | | |

HC1 50% = 0.064
HC5 50% = 0.19
HC10 50% = 0.35
HC20 50% = 0.81

HR TV (Burr HC5 50%) = 0.19 = 0.2 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.064 | 0.19 | 0.35 | 0.81 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.06 | 0.2 | 0.4 | 0.8 µg/L |

## Marine
### HR Calculations

The data used in the calculations were:

| | | | | |
|---|---|---|---|---|
| 3025.23 | 10 | 140 | 1040 | 132.37 |
| 168.71 | 5.7 | 20 | 62 | 240 |
| 138.56 | 437.95 | 322.69 | 4400 | 22 |
| 430 | 262 | 340 | 123.64 | 400 |
| 1069.63 | 200 | 64.81 | 2.75 | 2.96 |
| 228.07 | 3200 | 92.46 | 1280 | 68.99 |
| 7.05 | 140 | 412.55 | 29.39 | 260 |
| 3058.10 | 143.6 | 4472.14 | 98 | 332.76 |
| 15.60 | 12393.55 | 14.04 | 2529.46 | |

HC1 50% = 0.71
HC5 50% = 5.51
HC10 50% = 13.71
HC20 50% = 36.38

HR TV (Burr HC1 50%) = 0.71 = 0.7 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Cadmium can bioaccumulate in marine systems and in-order to provide adequate protection to marine crustaceans that showed low chronic toxicity.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.71 | 5.51 | 13.71 | 36.38 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.7 | 5.5 | 14 | 36 µg/L |

# Chromium (III)

## Freshwater

### Fails HR and MR

There were only chronic toxicity data for 6 species that belong to 3 taxonomic groups (fish, crustacea and amphibia). Therefore, a HR TV can not be derived.

There were only acute toxicity data for  species that belong to 2 taxonomic groups (fish and crustacea). Therefore, a MR TV can not be derived.

There is in total, toxicity data for 3 taxonomic groups (fish, crustacea and amphibia) therefore, an LR (interim) TV could not be derived. However, there was an unscreened chronic toxicity value to a freshwater alga reported by the USEPA of 397 µg/L. Using this value allowed an LR (interim) TV to be derived.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷20 |
| | = | 66.2 ÷20 |
| | = | 3.31 |
| | ≈ | 3.3 µg/L |

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine

### MR Calculations

The data used in the calculations were:

| | | | | |
|---|---|---|---|---|
| 19270 | 53000 | 10300 | 2598.08 | 100000 |

Because toxicity data were limited to less than eight species, the Burr Type III distribution was applied with caution (as per the directions in the BurrliOZ software section of the 'TOX-Read Me' File on the CD-ROM and Internet site). The fit of the log-logistic and the selected Burr Type III distributions to the data were compared. This showed that the log-logistic distribution fitted the data better than the selected Burr Type III distribution. Therefore, the Trigger Value and other levels of protection were calculated using the log-logistic distribution.

| | | |
|---|---|---|
| HC1 50% | = | 597.37 |
| HC5 50% | = | 2125.69 |
| HC10 50% | = | 3770.39 |
| HC20 50% | = | 7028.75 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 77.58.

MR TV = 2125.70 ÷ 77.58 = 27.4 = 27 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 7.7 | 27.39 | 48.60 | 90.60 |

These were rounded off to

| | | | |
|---|---|---|---|
| 8.0 | 27 | 48.6 | 90.6 µg/L |

# Chromium (VI)
## Freshwater
### HR Calculations

The data used in the calculations were:

| | | | | |
|---|---|---|---|---|
| 183.45 | 1060 | 1000 | 28 002.05 | 5 744.56 |
| 4.733 | 1000 | 49.506 | 32.53 | 19 000 |
| 30 | 1 729.50 | 63.82 | 1182.6 | 208.13 |
| 2 250.9 | 2 537.61 | 85.24 | 0.102 | |

HC1 50% = 0.014
HC5 50% = 1.0
HC10 50% = 6.24
HC20 50% = 39.21

TV (Burr HC5 50%) = 1.0

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.014 | 1 | 6.24 | 39.21 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 1 | 6 | 40 µg/L |

## Marine
### HR Calculations

The data used in the calculations were:

| | | | | |
|---|---|---|---|---|
| 2 000 | 12.50 | 200 | 4 | 56 |
| 262.39 | 770.06 | 1267.02 | 3 346.64 | 39.77 |
| 81.70 | 2 902.71 | 187.2 | 94.57 | 4.74 |
| 8 800 | 9 998.74 | 1600 | 705.72 | 2 000 |
| 5 | 728 | 1 130.94 | 140 | 176.64 |
| 540 | 1456 | 2501.2 | 1 200 | 478.48 |
| 1 174.07 | 9.55 | 3 123.20 | 916.55 | 1 993.31 |
| 195.97 | | | | |

HC1 50% = 0.14
HC5 50% = 4.36
HC10 50% = 19.32

| | | | | |
|---|---|---|---|---|
| HC20 50% | = | 85.53 | | |
| HR TV (Burr HC5 50%) | = | 4.36 | = | 4.4 µg/L |

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.14 | 4.36 | 19.32 | 85.53 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.14 | 4.4 | 20 | 85 µg/L |

# Cobalt
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 522 | 2475.06 | 612872 | 80909.83 | 4000 | 2478.38 |
| 15500 | 8800 | 10200 | 102000 | 10002.31 | 12000 |
| 32000 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 306.7 |
| HC5 50% | = | 920.5 |
| HC10 50% | = | 1599 |
| HC20 50% | = | 3085 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR. The resulting TV did not provide adequate protection to the species for which chronic toxicity data were available.

Therefore the TV was based on the HC1 50% value. However, there were chronic toxicity values which were considerably below the suggested TV. This was particularly the case for *Daphnia magna* which is an important zooplankton species.

Therefore, in this case a LR (interim) TV was derived. An AF of 2 rather than the default value of 10 was used as cobalt is an essential element.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ AF |
| | = | 2.8 ÷ 2 |
| | = | 1.4 µg/L |

Lower levels of protection could not be calculated as the TV was derived using the AF method.

## Marine
### HR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 45400 | 9080 | 60 | 64.21 | 18800 |
| 9.08 | 3103.03 | 10500 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.0047 |
| HC5 50% | = | 1.254 |
| HC10 50% | = | 13.88 |
| HC20 50% | = | 153.7 |

TV (Burr HC5 50%) = 1.25 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.004717 | 1.254 | 13.88 | 153.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.005 | 1 | 14 | 150 µg/L |

# Copper

## Freshwater

### HR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 20.34 | 32.86 | 26.4 | 8.24 | 6.50 | 2.98 |
| 5.73 | 130.83 | 23.2 | 2.56 | 2.12 | 2.48 |
| 1.7 | 1.68 | 4.2 | 10.18 | 11.04 | 2.22 |
| 5.33 | 1.64 | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.97 |
| HC5 50% | = | 1.43 |
| HC10 50% | = | 1.80 |
| HC20 50% | = | 2.48 |

TV (Burr HC5 50%) = 1.43

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.9735 | 1.427 | 1.802 | 2.48 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1 | 1.4 | 1.8 | 2.5 µg/L |

## Marine

### HR Calculations

The data used in the calculations were:

| | | | | | |
|---|---|---|---|---|---|
| 2.08 | 30.2 | 122 | 48.44 | 40 | 6514.5 |
| 5.10 | 620 | 20 | 500 | 3 | 1.98 |
| 30 | 32 | 126.91 | 10.2 | 260 | 42 |
| 27.5 | 0.4 | 17.0 | 66.95 | 20000 | 17.66 |
| 446.68 | 400 | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.20 |
| HC5 50% | = | 1.29 |
| HC10 50% | = | 3.04 |
| HC20 50% | = | 7.78 |

TV (Burr HC5 50%) = 1.39

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.2 | 1.29 | 3.04 | 7.78 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.2 | 1.3 | 3 | 8 µg/L |

# Gallium

## Freshwater

**Fails HR and MR**

There was only one acceptable piece of data and it is for a fish. Therefore, only a LR (ECL) TV could be derived.

| | | | |
|---|---|---|---|
| LR (ECL) TV | = | 3510 ÷ 200 | (used an AF of 200 as lowest value was chronic) |
| | = | 17.5 | |
| | ≈ | 18 µg/L | |

An AF of 200 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine water

There was no toxicity data for marine species. Therefore no TV could be derived.

# Iron

The Canadian water quality guideline was adopted for iron.

# Lanthanum

## Freshwater

There were no screened toxicity data. There was only one unscreened datum (a 48h EC50) for *Daphnia carinata* (Barry & Meehan, unpublished). Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | 43 ÷ 1000 |
| | = | 0.043 |
| | ≈ | 0.04 µg/L |

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no toxicity data for marine species therefore no TV could be derived.

# Lead
## Freshwater
### HR Calculations

The data used in the calculation were:

| | | | | | |
|---|---|---|---|---|---|
| 67.6 | 5.65 | 11.12 | 27.95 | 27.89 | 19.48 |
| 5.11 | 28.4 | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 1.02 |
| HC5 50% | = | 3.36 |
| HC10 50% | = | 5.62 |
| HC20 50% | = | 9.44 |

TV (Burr HC5 50%) = 3.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 1.02 | 3.36 | 5.62 | 9.44 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1 | 3.4 | 5.6 | 9.4 µg/L |

# Marine
### HR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 340.25 | 12.02 | 8 | 25 | 8 | 891.92 | 622 |

| | | | | |
|---|---|---|---|---|
| HC1 50% | = | 2.23 | | |
| HC5 50% | = | 4.35 | | |
| HC10 50% | = | 6.56 | | |
| HC20 50% | = | 11.47 | | |

TV (Burr HC5 50%) = 4.35 µg/L = 4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2.23 | 4.35 | 6.56 | 11.47 |

These were rounded off to

| | | | |
|---|---|---|---|
| 2.2 | 4.4 | 6.6 | 12 µg/L |

# Manganese
## Freshwater
### Fails HR
### MR Calculations

The data used in the calculations were:

| | | | | |
|---|---|---|---|---|
| 220325.1 | 981817.7 | 21116.65 | 38700 | 28000 |
| 51000 | 506698.1 | 310000 | 1040000 | 130000 |
| 33800 | 38700 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 10775 |
| HC5 50% | = | 17013 |
| HC10 50% | = | 22500 |
| HC20 50% | = | 32915 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The only ACR for Manganese was 9.08.

MR TV = 17013 ÷ 9.08 = 1873.7 ≈ 1900 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 1186.7 | 1873.7 | 2477.9 | 3625.03 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1200 | 1900 | 2500 | 3600 |

# Marine
There were only toxicity data for 6 species that belong to 3 taxonomic groups. The data failed the minimum data requirements for HR, MR and interim TVs.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 200 |
| | = | 16000 µg/L ÷ 200 |
| | = | 80 µg/L |

An AF of 200 was used as the lowest toxicity value was chronic.

The lower values of 10 and 1500 were not used because they were (a) not reliable and (too short term) respectively and (b) converted NOEC data was not used to derive LR TVs.

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Mercury
## Freshwater
### HR Calculations

The data used to derive the TV were:

| | | | |
|---|---|---|---|
| 12.65 | 71.13 | 34.69 | 1.0412 |
| 29.15 | 2.569 | 48.86 | |

| | | |
|---|---|---|
| HC1 50% | = | 0.056 |
| HC5 50% | = | 0.65 |
| HC10 50% | = | 1.89 |
| HC20 50% | = | 5.45 |

TV (Burr HC1 50%) = 0.056 µg/L = 0.06 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Mercury bioaccumulates.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.056 | 0.65 | 1.89 | 5.45 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.06 | 0.6 | 1.9 | 5.4 |

# Marine
### HR Calculations

| | | | | |
|---|---|---|---|---|
| 4.11 | 4 | 4 | 20 | 2.4 |
| 2 | 1.34 | 4.1134 | 4.1134 | 8.53 |
| 2.94 | 59.53 | 0.8 | 0.36 | 0.12 |
| 140 | 7.82 | 12 | 840 | 10 |
| 4.11 | 88 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.10 |
| HC5 50% | = | 0.36 |
| HC10 50% | = | 0.66 |
| HC20 50% | = | 1.36 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

TV (Burr HC1 50%) = 0.10 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Mercury bioaccumulates.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.1 | 0.36 | 0.66 | 1.36 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 0.4 | 0.7 | 1.4 µg/L |

# Molybdenum
## Freshwater
### Fails HR and MR

There were insufficient data (4 species belonging to 3 taxonomic groups) to derive a HR or MR TV. Only an LR (interim) TV could be derived.

LR (Interim) TV = lowest value ÷ 20
= 670 ÷ 20
= 34 ug/L

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine

There were only toxicity data for 2 species that belong to 1 taxonomic group.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 4500 µg/L ÷ 200
= 22.5
≈ 23 µg/L

An AF of 200 was used as Molybdenum is an essential element.

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Nickel
## Freshwater
### HR Calculations

The data used in the calculation were:

| | | | | | |
|---|---|---|---|---|---|
| 31.4 | 93.39 | 13.67 | 39.46 | 151.4 | 13.48 |

HC1 50% = 7.88
HC5 50% = 10.89
HC10 50% = 13.27
HC20 50% = 17.36

HR TV (Burr HC5 50%) = 10.89 = 11 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 7.88 | 10.89 | 13.27 | 17.36 |

These were rounded off to

| | | | |
|---|---|---|---|
| 8 | 11 | 13 | 17 µg/L |

# Marine
## HR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 2456 | 2600 | 1702.14 | 240 | 30000 |
| 22636.09 | 1140 | 22400 | 3200 | 1540 |
| 5000 | 6000 | 160 | 141 | 50 |

The values of 141 and 50 are not in the database. These were obtained quite late in the derivation process and we do not have all the details required for the database. However, we know sufficient to class them both as reliable data. The value of 141 µg/L is a chronic toxicity value for *Mysidopis bahia* obtained from the USEPA (1986) and background data. The value of 50 was obtained by dividing a chronic EC50 (population growth) value of 250 µg/L to *Nitzschia closterium* (Florence et al. 1994) by 5 to obtain a converted NOEC value.

| | | |
|---|---|---|
| HC1 50% | = | 6.74 |
| HC5 50% | = | 71.25 |
| HC10 50% | = | 198.12 |
| HC20 50% | = | 562.97 |

HR TV (Burr HC1 50%) = 70 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the HC5 50% was not considered to offer sufficient protection to the most sensitive species for which there were acute toxicity data (*P. pelagicus* and a mysid).

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 6.74 | 71.25 | 198.1 | 562.9 |

These were rounded off to

| | | | |
|---|---|---|---|
| 7 | 70 | 200 | 560 µg/L |

# Selenium (Total ie. Se IV & Se VI)
# Freshwater
## HR Calculations

The data used in the calculation were:

| | | | | |
|---|---|---|---|---|
| 276.33 | 69.91 | 14 | 120 | 16500.62 |

**NOTE:** The pH of the test solutions in which these tests were conducted varied from 7.3 to 7.98 and therefore was within the acceptable pH range of 6.5-9. The value of 16 595.87 is a noticeable outlier.

However, if this value is removed then the data does not meet the minimum data requirements of the statistical extrapolation method.

HC1 50% = 5.35
HC5 50% = 11.31
HC10 50% = 17.89
HC20 50% = 33.86

NOTE: This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.
HR TV (Burr HC1 50%) = 5.35 = 5.4 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Selenium bioaccumulates.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 5.35 | 11.31 | 17.89 | 33.86 |

These were rounded off to

| | | | |
|---|---|---|---|
| 5.4 | 11.3 | 18 | 34 µg/L |

## Marine

There were only toxicity data for 3 different taxonomic groups (fish, crustacea and mollusca) and there were no algae. However, while the alga did not pass the screening process it was used in this case so that a MR (interim) TV could be derived. This was done as the data does give an indication of the sensitivity of alga and it did not drive the size of the TV — it only modifies the size of the AF.

LR (interim) TV = lowest value ÷ 100
= 255 ÷ 100
= 2.55
≈ 3 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Selenium (IV)

## Freshwater

There were only toxicity data for 6 species of fish. Therefore only an LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 2250 ÷ 200
= 11.25
≈ 11 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine water

There were no screened toxicity data for marine species. There was however, an un-screened 72 h $EC_{50}$ figure > 2 mg/L reported for *Nitzschia closterium* (Florence et al. 1994). Because it is a "greater than" toxicity value it could not be used to derive a TV. Therefore no TV could be derived.

# Silver
## Freshwater
### HR Calculation

The data used in the calculation were:

| | | | | |
|---|---|---|---|---|
| 48.00 | 0.16 | 0.44 | 0.24 | 5.84 |
| 22 | 0.079 | 280.0 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.020 |
| HC5 50% | = | 0.054 |
| HC10 50% | = | 0.098 |
| HC20 50% | = | 0.22 |

TV (Burr HC5 50%) = 0.06 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.020 | 0.054 | 0.098 | 0.22 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.02 | 0.05 | 0.1 | 0.2 µg/L |

## Marine
### HR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 1.55 | 5.0 | 1.6 | 6.48 | 14.09 |
| 6.0 | 34.41 | 6.0 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.76 |
| HC5 50% | = | 1.35 |
| HC10 50% | = | 1.81 |
| HC20 50% | = | 2.59 |

TV (Burr HC5 50%) = 1.35 = 1.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.76 | 1.35 | 1.81 | 2.59 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.8 | 1.4 | 1.8 | 2.6 µg/L |

# Thallium
## Freshwater
### Fails HR and MR

An LR (interim) TV could be derived if the algae toxicity data was accepted. The problem is that the pH of the alga data ranged from 2.2-8, which is outside the normal acceptable range. The remainder of

data had a pH range of 7.5-8.6. The alga data was accepted because although it was outside the normal pH range it gave an indication of algal sensitivity and it would not drive the TV. Therefore a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 20
= 0.5 ÷ 20
= 0.03 µg/L

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine
### Fails HR and MR

There were toxicity data for 6 species that belonged to 3 taxonomic groups; fish, crustacea and diatoms. Therefore, an LR (interim ) TV could be derived.

LR (interim) TV = lowest value ÷ 20
= 330 ÷ 20
= 16.5 µg/L

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Tin
## Freshwater
### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 2 species which belonged to 2 taxonomic groups (insecta and annelida).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 3000 µg/L ÷ 1000
= 3 µg/L

## Marine
### Fails HR and MR

There were chronic toxicity data for 2 species that belonged to 1 taxonomic group — diatom.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 200 ÷ 200
= 1 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

There was however, a number of unscreened toxicity data available from Mance et al. (1988). These data indicate that there were no toxic effects on crustaceans and fish at concentrations up to the

maximum aqueous solubility. Mance et al. (1988) recommended a TV of 0.25 times the aqueous solubility of inorganic tin in seawater (ie 10 µg/L). This value is consistent with the LR (ECL) TV derived in this study and was therefore adopted.

LR TV = 10 µg/L

# Tributyltin

## Freshwater

### Fails HR and MR

There were toxicity data for 3 species which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2.2 µg/L ÷ 1000
= 0.0022
= 0.002 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine

### HR Calculations

The data used to derive the TV were:

0.6 0.0042 0.13 0.043 0.368 11.37
1.35 0.44

HC1 50% = 0.0004
HC5 50% = 0.0055
HC10 50% = 0.017
HC20 50% = 0.054

HR TV (Burr HC5 50%) = 0.0055 = 0.006 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0004 | 0.0055 | 0.017 | 0.054 |

These were rounded off to

0.0004 0.006 0.02 0.05 µg/L

# Uranium

## Freshwater

### Fails HR and MR

There were only chronic toxicity data for 4 species which belonged to 3 taxonomic groups (fish, crustacea and hydra). Therefore a HR TV could not be derived.

There were only acute toxicity data for 8 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only an LR (interim) TV could be derived.

LR (Interim) TV = lowest value ÷ 20
= 10 µg/L ÷ 20
= 0.5 µg/L

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine

There were no toxicity data for marine species. Therefore no TV could be derived.

# Vanadium

## Freshwater

### Fails HR and MR

There were only toxicity data for 7 species that belonged to 3 taxonomic groups. The alga data were conducted at a pH between 2.2 and 8. Such data is outside the acceptable range and would normally be excluded. However, in this case the data was included as only an interim could be derived and the alga data was not the lowest and therefore would not affect the magnitude of the TV.

LR (Interim) TV = lowest value ÷ 20
= 120 ÷ 20
= 6 µg/L

An AF of 20 was used as the lowest toxicity value was chronic.

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine

### HR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 400 | 7000 | 100 | 13000 | 2000 | 600 |

HC1 50% = 46.49
HC5 50% = 100.2
HC10 50% = 155.9
HC20 50% = 277.7

TV (Burr HC5 50%) = 100

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 46.49 | 100.2 | 155.86 | 277.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 50 | 100 | 160 | 280 µg/L |

# Zinc
## Freshwater
### HR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 180.4 | 25.30 | 5.52 | 21.04 | 18480 | 650 |
| 189.4 | 226.14 | 370.8 | 53.73 | 60.4 | 71.05 |
| 1182.84 | 102.4 | 65 | 560 | 108.85 | 253.16 |
| 1120 | 5 | | | | |

Note that the data for *Salmo salar* were not used to derive the TV as the experiments were conducted at pH outside the acceptable pH range.

| | | |
|---|---|---|
| HC1 50% | = | 2.35 |
| HC5 50% | = | 7.99 |
| HC10 50% | = | 14.82 |
| HC20 50% | = | 31.04 |

TV (Burr HC5 50%) = 7.99 = 8 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2.35 | 7.99 | 14.82 | 31.04 µg/L |

These were rounded off to

| | | | |
|---|---|---|---|
| 2.4 | 8 | 15 | 31 µg/L |

## Marine
### HR Calculations

The data used in the calculation were:

| | | | | | |
|---|---|---|---|---|---|
| 14.77 | 39.6 | 460 | 277.7 | 611.29 | 391.43 |
| 15 | 5059.64 | 490.87 | 20 | 10400 | 27465.96 |
| 620 | 89.26 | 1480 | 128 | 520 | 46.51 |
| 13 | 393.49 | 40 | 2100 | 561.44 | 65 |

| | | |
|---|---|---|
| HC1 50% | = | 6.78 |
| HC5 50% | = | 14.43 |
| HC10 50% | = | 22.89 |
| HC20 50% | = | 42.92 |

TV (Burr HC5 50%) = 14.43 = 14.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 6.78 | 14.43 | 22.891 | 42.92 |

These were rounded off to

| | | | |
|---|---|---|---|
| 7 | 15 | 23 | 43 µg/L |

# Ammonia
## Freshwater
### HR Calculation

The data, expressed in mg/L, used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 8.81 | 4.79 | 3.27 | 19.72 | 6.15 | 4.16 |
| 4.88 | 1.35 | 4.56 | 2.62 | 0.54 | 1.79 |
| 4.4 | 19.77 | 13.03 | 17.14 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.32 mg/L |
| HC5 50% | = | 0.90 mg/L |
| HC10 50% | = | 1.43 mg/L |
| HC20 50% | = | 2.32 mg/L |

TV (Burr HC5 50%) = 0.90 mg/L = 900 = 900µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 320 | 900 | 1430 | 2320 |

These were rounded off to

| | | | |
|---|---|---|---|
| 320 | 900 | 1430 | 2300 µg/L |

The 95% figure was considered sufficiently protective of most *slightly-moderately disturbed* systems. However, this figure may not be sufficiently protective of the freshwater clam *Sphaerium novazelandiae* and related species. If this species is significant at a site, site-specific studies or a higher protection level may be warranted.

## Marine
### Fails HR
### MR Calculation

The data, expressed in mg/L, used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 21402.62 | 44895.93 | 8779.25 | 158046.99 | 18686.99 | 49167.96 |
| 77461.35 | 25666.30 | 103592.88 | 33671.95 | 40260.72 | 46089.98 |
| 26460.07 | 20850.18 | 264345.15 | 25666.3 | 105583.76 | 26069.71 |
| 42755.01 | 7724.08 | 142210.4 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 5745 |
| HC5 50% | = | 10426 |
| HC10 50% | = | 13989 |
| HC20 50% | = | 19750 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 11.49.

MR TV = 10426 ÷ 11.49 = 907.398 = 910 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 500 | 907.398 | 1217.493 | 1718.885 |

These were rounded off to

| | | | |
|---|---|---|---|
| 500 | 910 | 1200 | 1700 µg/L |

# Chlorine (expressed as chlorine — µg Cl/L)

## Freshwater

### Fails HR

### MR Calculations

The data used in the calculation were:

| | | | | | |
|---|---|---|---|---|---|
| 131.04 | 580 | 390 | 787.49 | 351 | 137.56 |
| 23.28 | 28.30 | 77.47 | 854.17 | 75.90 | 470 |
| 1010 | 487.35 | 10459.74 | 7101 | 1070 | 1350 |
| 2176.44 | | | | | |

HC1 50% = 4.18
HC5 50% = 26.47
HC10 50% = 58.94
HC20 50% = 133.56

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 2.36.

MR TV = 26.47 ÷ 2.36 = 11.22 = 11 µg/L

However, the above TV was not adopted because there were acute toxicity values of 5 & 6 for *D. magna*. Therefore, a default AF of 10 rather than the ACR of 2.36 was used to derive the TV. This is shown below.

MR TV = 26.47 ÷ 10 = 2.647 = 2.6 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.418 | 2.647 | 5.894 | 13.356 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.4 | 3 | 6 | 13 µg/L |

## Marine

### Fails HR and MR

There were only acute toxicity data for 4 different species that belonged to 2 different taxonomic groups (fish and crustacea).

Therefore, the data failed the minimum data requirements to derive a HR, MR or interim TV. Only a LR (ECL) TV could be derived.
LR (ECL) TV = lowest value ÷ AF

= 44 ÷ 1000
= 0.04 µg/L

However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 26.47 ÷ 10 = 2.647 = 2.6 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.418 | 2.647 | 5.894 | 13.356 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.4 | 3 | 6 | 13 µg/L |

# Cyanide
## Freshwater
### Fails HR
### MR Calculations (Cyanide expressed as unionised cyanide HCN µgCN/L)

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 562.3 | 461.35 | 247.5 | 223.3 | 803.74 |
| 376.49 | 1229.15 | 992.1 | 1165.47 | 100.42 |
| 62.93 | 127.44 | 98.12 | 140.63 | 60.71 |
| 100.22 | 107.55 | 40.32 | 98.3 | 1166.74 |
| 1241.36 | 64078.6 | 62400 | 2153.3 | 821192.35 |
| 10636.2 | 2575.61 | 3322.23 | 18121.25 | 1121.54 |
| 2511.82 | 3011.31 | 486.02 | 488.68 | 532.15 |
| 448.69 | 4433.22 | 93.98 | 486.24 | 257.31 |
| 2284.90 | 1743.15 | 252.7 | 257.9 | 922.84 |
| 134.71 | | | | |

HC1 50% = 33.06
HC5 50% = 62.30
HC10 50% = 91.82
HC20 50% = 155.63

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 8.45.

MR TV = 62.30 ÷ 8.45 (ACR) = 7.373 = 7 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.9124 | 7.3728 | 10.8663 | 18.4178 |

These were rounded off to

| | | | |
|---|---|---|---|
| 4 | 7 | 11 | 18 µg/L |

# Marine
## Fails HR
## MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 67.4 | 105 | 6708 | 240.7 | 105.9 | 34666.7 |
| 10424 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 16.04 |
| HC5 50% | = | 35.90 |
| HC10 50% | = | 58.77 |
| HC20 50% | = | 114.93 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 8.45.

MR TV = 35.90 ÷ 8.45 = 4.248 = 4.2 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 1.898 | 4.249 | 6.955 | 13.601 |

These were rounded off to

| | | | |
|---|---|---|---|
| 2 | 4 | 7 | 14 µg/L |

# Nitrate
## Freshwater
## Fails HR
## MR Calculations

The data used to derive the TV were:

| | | | |
|---|---|---|---|
| 340406.4 | 896847.9 | 7630126 | 5582000 |
| 14000 | 5998000 | 5799000 | 720085.7 |
| 733058.5 | 576645.9 | 723490.7 | 9000 |

| | | |
|---|---|---|
| HC1 50% | = | 167.4 |
| HC5 50% | = | 6855 |
| HC10 50% | = | 33909 |
| HC20 50% | = | 167737 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV = 6855 ÷ 10 = 685.5 = 685 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 16.74 | 685.5 | 3390.9 | 16773.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 17 | 700 | 3400 | 17 000 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 7 species that belonged to 2 taxonomic groups (fish and mollusca). Therefore, the data failed HR & MR methods. The best level of TV that could be derived was the LR (ECL) TV.

LR (ECL) TV = 2 536 000 ÷ 200 (an AF of 200 was used as nitrate is an essential element)
= 12 680

≈ 13 000 µg/L

An AF of 200 was used as nitrate is an essential element.

However, the freshwater MR TV was of higher quality and was therefore adopted as a LR (interim) TV.

LR (interim) TV = 685 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 16.74 | 685.5 | 3390.9 | 16773.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 17 | 700 | 3400 | 17 000 µg/L |

## **Sulfide** (expressed as undissociated sulfide)
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 53.57 | 23.44 | 12.00 | 40.19 | 24.18 | 34.80 | 25.63 |
| 17.88 | 56.55 | 7 | 26.10 | 39.62 | 141.23 | 1072.90 |
| 45.62 | 160.00 | 487.90 | 363.61 | 363.61 | 2223.66 | 19532.13 |
| 1374.10 | 26.40 | 403.8 | 188.08 | 27690.23 | 6009.9 | |

HC1 50% = 4.79
HC5 50% = 9.63
HC10 50% = 14.77
HC20 50% = 26.45

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV (HC5 50%) = 9.63 ÷ 10 = 0.963 = 0.963µg/L
The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.479 | 0.963 | 1.477 | 2.645 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.5 | 1.0 | 1.5 | 2.6 µg/L |

**NOTE:** However, in order to calculate a MR TV, data that used sodium sulfide had to be included. The problem with this is that in such cases the concentrations were nominal and $H_2S$ is very volatile so the actual concentrations were probably much lower than the nominal. Therefore the toxicity data may considerably overestimate the actual concentrations that would cause the effects.

## Marine

There were no chronic toxicity data for marine species and only acute data for 5 species that belonged to 3 taxonomic groups (mollusc, echinoderm, crustaceans). Therefore only a LR (ECL) could be derived. However, the freshwater TV was of higher quality that this and was therefore adopted for marine waters.

LR TV = 9.63 ÷ 10 = 0.963 = 0.963µg/L
The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.479 | 0.963 | 1.477 | 2.645 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.5 | 10 | 1.5 | 2.5 |

# Ethyl alcohol (ethanol) [CAS No. 64-17-5]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 4347413 | 9500000 | 15000000 | 13000000 | 13656503 |
| 880800 | 9273963.55 | 25100000 | 11962810 | |

| | | |
|---|---|---|
| HC1 50% | = | 511202 |
| HC5 50% | = | 1759198 |
| HC10 50% | = | 2995514 |
| HC20 50% | = | 5101422 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MRI TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (crustaceans) was 1258.71.

MR TV = 1759198 ÷ 1258.71 = 1397.62 = 1400 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 406.132 | 1397.620 | 2379.829 | 4052.897 |

These were rounded off to

| | | | |
|---|---|---|---|
| 400 | 1400 | 2400 | 4000 |

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The QSAR data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 42400000 | 679000 | 1830000 | 2260000 | 2930000 | 3310000 |
| 1830000 | 35900000 | 4280000 | 759000 | 708000 | 582000 |
| 4380000 | 891000 | 383000 | 1110000 | 3400000 | 1420000 |
| 2000 | 9600 | | | | |

HC1 50% = 2445
HC5 50% = 31192
HC10 50% = 93708
HC20 50% = 285475

LR (Interim) TV = 31192 ÷ 10 = 3100 µg/L

NOTE: But as this estimate of the TV was above the toxicity of the two most sensitive species (with geometric means of 2000 and 9600) the marine LR (Interim) TV was not adopted. Rather the freshwater MR TV was adopted as an LR TV.

LR TV = 1400 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 406.13 | 1398 | 2379 | 4052 |

These were rounded off to

400 1400 2400 4000 µg/L

# Ethylene glycol [CAS No. 107-21-1]

## Freshwater

### Fails HR and MR

There were only chronic toxicity data for 1 species (a fish) and acute toxicity data for 7 species that belonged to 3 taxonomic groups (fish, crustacea, amphibia)

Therefore only an LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 326 000 µg/L ÷ 1000
= 326 µg/L

Which was rounded up to 330 µg/L

LR (ECL) TV = 330 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine
### Fails HR and MR

There was only acute toxicity datum for 1 species, a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 50 000 000 µg/L ÷ 1000
= 50 000 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Isopropanol (Isopropyl alcohol) [CAS No. 67-63-0]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 4 species, 2 fish, 1 insect and a protozoan.

ThereforeOnly a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 4 200 000 µg/L ÷ 1000
= 4200 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

## Marine
### Fails HR and MR

There were toxicity data for only 1 marine species, a crustacean.

ThereforeOnly a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1 150 000 µg/L ÷ 1000
= 1150
≈ 1200 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

# Dichloromethane [CAS No. 75-09-2]
## Fresh and Marinewater
### Fails HR and MR
### LR (Interim) Calculations using QSAR derived toxicity data

HC1 50% = 26715
HC5 50% = 39319
HC10 50% = 49810
HC20 50% = 68725

LR (Interim) TV = 39319 ÷ 10 = 3950 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 2671.5 | 3931.9 | 4981 | 6872.5 |

These were rounded off to

3000 4000 5000 7000 µg/L

# Chloroform [CAS No. 67-66-3]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 3400 | 47264.52 | 550000 | 93000 | 41000 | 1480000 |
| 61100 | 164000 | 165000 | 93900 | 24900 | 1550000 |
| 166000 | 21500 | 20100 | 25100 | 37100 | 25300 |
| 10300 | 28400 | 28800 | 32700 | | |

HC1 50% = 3677
HC5 50% = 7749
HC10 50% = 11474
HC20 50% = 18609

LR (Interim) TV (HC1 50%) = 3677 ÷ 10 = 370 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because there was a chronic toxicity value of 200 µg/L and therefore the TV was felt to not provide adequate protection.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 367.7 | 774.9 | 1147.4 | 1860.9 |

These were rounded off to

370 770 1100 1900 µg/L

# Carbon tetrachloride [CAS No. 56-23-5]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 377000 | 22200 | 59700 | 55300 | 53600 | 22000 | 4440 |
| 426000 | 44000 | 5050 | 4710 | 6910 | 3500 | 5520 |
| 5930 | 2370 | 6410 | 4290 | 7080 | | |

HC1 50% = 1507
HC5 50% = 2383
HC10 50% = 3154
HC20 50% = 4619

LR (Interim) TV (HC5 50%) = 2383 ÷ 10 = 240 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 150.8 | 238.3 | 315.4 | 461.9 |

These were rounded off to

150 240 320 460 µg/L

# 1,2-dichloroethane [CAS No. 107-06-2]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using toxicity data derived using QSARs

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 29000 | 11000 | 360000 | 53000 | 200000 | 3100000 |
| 104000 | 281000 | 295000 | 324000 | 206000 | 63900 |
| 3100000 | 340000 | 47100 | 43900 | 50300 | 105000 |
| 55300 | 22800 | 63600 | 81700 | 74800 | |

HC1 50% = 10812
HC5 50% = 19144
HC10 50% = 26420
HC20 50% = 40042

LR (Interim) TV (HC5 50%) = 19144 ÷ 10 = 1900 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 1081.2 | 1914.4 | 2642 | 4004.2 |

These were rounded off to

1000 1900 2600 4000 µg/L

# 1,1,1-trichloroethane [CAS No. 71-55-6]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1: 7700 | 2: 130000 | 3: 1300 | 4: 621000 | 5: 31700 | 6: 85400 |
| 7: 81700 | 8: 81700 | 9: 37500 | 10: 8420 | 11: 681000 | 12: 71300 |
| 13: 8590 | 14: 8010 | 15: 11000 | 16: 11200 | 17: 10100 | 18: 4060 |

19: 11100 20: 8730 21: 12400

| | | |
|---|---|---|
| HC1 50% | = | 1320 |
| HC5 50% | = | 2680 |
| HC10 50% | = | 3968 |
| HC20 50% | = | 6548 |

LR (Interim) TV (HC5 50%) = 2680 ÷ 10 = 270 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 132 | 268 | 396.8 | 654.8 |

These were rounded off to

| | | | |
|---|---|---|---|
| 130 | 270 | 400 | 650 µg/L |

# 1,1,2-trichloroethane [CAS No. 79-00-5]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 60000 | 34000 | 54757.85 | 70000 | 40000 | 57000 |
| 48438.50 | 81679.84 | 38000 | 55729.5 | 78000 | 47291.54 |
| 55000 | 55000 | 96000 | 147000 | 320000 | 170000 |
| 170000 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 29723 |
| HC5 50% | = | 35535 |
| HC10 50% | = | 39639 |
| HC20 50% | = | 45997 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 5.46.

MR TV = 35535 ÷ 5.46 (ACR) = 6508.24 = 6 500 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 5443.772894 | 6508.241758 | 7259.89011 | 8424.358974 |

These were rounded off to

| | | | |
|---|---|---|---|
| 5400 | 6500 | 7300 | 8400 µg/L |

## Marine

### HR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 3000 | 10000 | 33000 | 260000 | 200000 | 200000 |
| 60000 | | | | | |

HC1 50% = 144.62
HC5 50% = 1913
HC10 50% = 5817
HC20 50% = 17689

HR TV = 1913 = 1900 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 144.62 | 1913 | 5817 | 17689 |

These were rounded off to

| | | | |
|---|---|---|---|
| 140 | 1900 | 5800 | 18000 µg/L |

# 1,1,2,2-tetrachloroethane [CAS No. 79-34-5]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 46300 | 57500 | 13300 | 13200 | 12300 | 16600 | 5100 |
| 18200 | 15500 | 6250 | 17100 | 14100 | 19200 | 944000 |
| 125000 | 120000 | 121000 | 1030000 | 108000 | 2144 | |

HC1 50% = 1995
HC5 50% = 3767
HC10 50% = 5433
HC20 50% = 8773

LR (Interim) TV (HC5 50%) = 3767 µg/L ÷ 10 = 376.7 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 199.469 | 376.714 | 543.273 | 877.284 |

These were rounded off to

| | | | |
|---|---|---|---|
| 200 | 400 | 500 | 900 µg/L |

# 1, 1, 2, 2, 2-pentachloroethane [CAS No. 76-01-7]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 237000 | 16400 | 44200 | 39500 | 36900 | 13400 | 2380 |
| 278000 | 28200 | 3070 | 2860 | 4510 | 1810 | 2730 |
| 360 | 1430 | 3820 | 2120 | 4150 | 10000 | |

HC1 50% = 347.4
HC5 50% = 752.1
HC10 50% = 1155
HC20 50% = 1998

LR (Interim) TV (HC5 50%) = 752.1 ÷ 10 = 75 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 34.74 | 75.21 | 115.5 | 199.8 |

These were rounded off to

| | | | |
|---|---|---|---|
| 30 | 80 | 120 | 200 µg/L |

# Hexachloroethane [CAS No. 67-72-1]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1372 | 1380 | 1853 | 1194 | 1116 | 1425 | 3889 |
| 4737 | 13000 | 2700 | 5800 | 2796 | 1964 | |

HC1 50% = 826.50
HC5 50% = 1030
HC10 50% = 1179
HC20 50% = 1417

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The fish ACR was 2.833.

MR TV (HC1 50%) = 826.50 ÷ 2.833 = 291.740 = 290 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Hexachloroethane can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 291.7402 | 363.685 | 416.205 | 500.081 |

These were rounded off to

| | | | |
|---|---|---|---|
| 290 | 360 | 420 | 500 µg/L |

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 48900 | 4950 | 13300 | 10900 | 9410 | 2530 | 334 |
| 62400 | 6060 | 581 | 542 | 1010 | 234 | 317 |
| 682 | 265 | 694 | 246 | 722 | | |

| | | |
|---|---|---|
| HC1 50% | = | 102.07 |
| HC5 50% | = | 181.11 |
| HC10 50% | = | 257.24 |
| HC20 50% | = | 414.73 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 102.07 ÷ 10 = 10 µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

MR TV (HC1 50%) = 826.50 ÷ 2.833 = 291.740 = 290 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Hexachloroethane can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 291.740 | 363.685 | 416.205 | 500.081 |

These were rounded off to

| | | | |
|---|---|---|---|
| 290 | 360 | 415 | 500 µg/L |

# 1,1-dichloropropane [CAS No. 78-99-9]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 33500 | 42700 | 10100 | 9790 | 9130 | 12200 | 8310 |
| 13900 | 11500 | 4650 | 12700 | 10800 | 14400 | 699000 |
| 90000 | 87500 | 88800 | 755000 | 79600 | | |

| | | |
|---|---|---|
| HC1 50% | = | 3382 |
| HC5 50% | = | 5183 |
| HC10 50% | = | 6731 |
| HC20 50% | = | 9605 |

LR (Interim) TV (HC5 50%) = 5200 ÷ 10 = 520 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 338.2 | 518.3 | 673.1 | 960.5 |

These were rounded off to

| | | | |
|---|---|---|---|
| 300 | 500 | 700 | 1000 µg/L |

# 1,2-dichloropropane [CAS No. 78-87-5]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 55300 | 83800 | 22000 | 19200 | 17900 | 22500 |
| 18800 | 32600 | 22500 | 25300 | 25300 | 29000 |
| 6000 | 1330000 | 149000 | 149000 | 156000 | 1390000 |
| 149000 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 5822 |
| HC5 50% | = | 9178 |
| HC10 50% | = | 12126 |
| HC20 50% | = | 17714 |

LR (Interim) TV (HC5 50%) = 9178 ÷ 10 = 917.8 = 920 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 582.22 | 917.778 | 1212.552 | 1771.441 |

These were rounded off to

| | | | |
|---|---|---|---|
| 600 | 900 | 1200 | 1800 µg/L |

# 1,3-dichloropropane [CAS No. 142-28-9]

## Freshwater and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 55300 | 83800 | 22000 | 19200 | 17900 | 22500 | 18800 |
| 32600 | 22500 | 9180 | 25300 | 25300 | 29000 | 1330000 |
| 149000 | 149000 | 156000 | 1390000 | 149000 | | |

| | | |
|---|---|---|
| HC1 50% | = | 7173.6 |
| HC5 50% | = | 10813 |
| HC10 50% | = | 13900 |
| HC20 50% | = | 19563 |

LR (Interim) TV (HC5 50%) = 10813 ÷ 10 = 1100 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 717.4 | 1081.3 | 1390 | 1956.3 |

These were rounded off to

| | | | |
|---|---|---|---|
| 700 | 1100 | 1400 | 2000 µg/L |

# Chloroethylene

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 165000 | 9560 | 25700 | 23900 | 23300 | 9690 | 1980 |
| 186000 | 19200 | 2220 | 2070 | 3020 | 1560 | 2480 |
| 2610 | 1040 | 2820 | 1930 | 3130 | | |

| | | |
|---|---|---|
| HC1 50% | = | 670.93 |
| HC5 50% | = | 1058 |
| HC10 50% | = | 1398 |
| HC20 50% | = | 2043 |

LR (Interim) TV (HC5 50%) = 1058 ÷ 10 = 106 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 67.09 | 105.8 | 139.8 | 204.3 |

These were rounded off to

| | | | |
|---|---|---|---|
| 70 | 100 | 140 | 200 µg/L |

# 1,1-dichloroethylene [CAS No. 75-35-4]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 891000 | 39200 | 106000 | 104000 | 108000 | 55600 | 14000 |
| 944000 | 101000 | 12700 | 11900 | 15300 | 11800 | 20200 |
| 15000 | 6070 | 16700 | 15700 | 19000 | | |

| | | |
|---|---|---|
| HC1 50% | = | 4627 |
| HC5 50% | = | 7016 |
| HC10 50% | = | 9052 |
| HC20 50% | = | 12804 |

LR (Interim) TV (HC5 50%) = 7016 ÷ 10 = 700 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 462.7 | 701.6 | 905.2 | 1280.4 |

These were rounded off to

| | | | |
|---|---|---|---|
| 500 | 700 | 900 | 1300 µg/L |

# 1, 1, 2-trichloroethylene [CAS No. 79-01-6]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 488000 | 26200 | 70600 | 66700 | 6600 | 29100 | 6290 |
| 541000 | 56400 | 6670 | 6230 | 8770 | 5060 | 8200 |
| 7840 | 3150 | 8550 | 6370 | 9550 | | |

| | | |
|---|---|---|
| HC1 50% | = | 2168 |
| HC5 50% | = | 3272 |
| HC10 50% | = | 4210 |
| HC20 50% | = | 5933 |

Interim TV (HC5 50%) = 3272 ÷ 10 = 330 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 216.8 | 327.2 | 421 | 593.3 |

These were rounded off to

| | | | |
|---|---|---|---|
| 220 | 330 | 400 | 600 µg/L |

# 1, 1, 2, 2-tetrachloroethylene [CAS No. 127-18-4]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 139000 | 10300 | 27800 | 24400 | 22500 | 7690 | 1290 |
| 165000 | 16600 | 1760 | 1640 | 2680 | 963 | 1420 |
| 2070 | 816 | 2180 | 1110 | 2340 | | |

| | | |
|---|---|---|
| HC1 50% | = | 426.6 |
| HC5 50% | = | 705.7 |
| HC10 50% | = | 960.2 |
| HC20 50% | = | 1460 |

LR (Interim) TV (HC5 50%) = 705.7 ÷ 10 = 70 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 42.66 | 70.57 | 96.02 | 146 |

These were rounded off to

| | | | |
|---|---|---|---|
| 40 | 70 | 100 | 150 µg/L |

# 3-Chloropropene [CAS No. 107-05-1]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 61700000 | 1020000 | 2740000 | 3370000 | 4330000 | 4790000 |
| 2590000 | 52600000 | 6250000 | 1100000 | 1020000 | 853000 |
| 2710000 | 6100000 | 1290000 | 553000 | 1600000 | 4740000 |
| 2040000 | 3200 | 4100 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 5770 |
| HC5 50% | = | 63939 |
| HC10 50% | = | 180157 |
| HC20 50% | = | 507612 |

LR (Interim) TV (HC5 50%) = 63 939 ÷ 10 = 640 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 577 | 6393.9 | 18015.7 | 50761.2 |

These were rounded off to

| | | | |
|---|---|---|---|
| 600 | 6400 | 18000 | 50 000 µg/L |

However, this TV does not provide protection to a number of species with acute toxicity values of 340 and 3200 µg/L. Therefore the assessment factor method was adopted.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ 100 |
| | = | 340 ÷ 100 |
| | = | 3 µg/L (after rounding off) |

The other levels of protection could not be calculated as the AF method was used to derive the TV.

# 1,3-dichloropropene [CAS No. 542-75-6]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 4 120 000 | 134 000 | 359 000 | 380 000 | 421 000 | 275 000 |
| 88 100 | 4 080 000 | 450 000 | 63 100 | 58 900 | 66 200 |
| 79 400 | 148 000 | 74 100 | 30 600 | 85 500 | 115 000 |
| 101 000 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 26070 |
| HC5 50% | = | 38488 |
| HC10 50% | = | 48849 |
| HC20 50% | = | 67572 |

LR (Interim) TV (HC5 50%) = 38488 ÷ 10 = 3850 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2607 | 3848.8 | 4884.9 | 6757.2 |

However, this TV did not provide adequate protection for some species from acute exposure (with values of 90 and 240 µg/L. Therefore the AF method was applied to experimental toxicity data (not QASR predicted values) to derive the LR TV.

There was only sufficient experimental toxicity data (5 species that were fish and crustaceans) to derive a LR (ECL) TV for freshwater. Similarly only a LR (ECL) TV could be derived for marine water as there was experimental toxicity data for 2 species — a fish and a crustacean.

For freshwaters

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 90 ÷ 1000 |
| | = | 0.09 |
| | ≈ | 0.1 µg/L |

For marine waters

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 790 ÷ 1000 |
| | = | 0.79 |
| | ≈ | 0.8 µg/L |

The other levels of protection could not be calculated as the AF method was used to derive the TV.

# Aniline [CAS No. 62-53-3]

## Freshwater

### HR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 8667.87 | 15700 | 4 | 154270 | 94000 | 19000 |

| | | |
|---|---|---|
| HC1 50% | = | 0.148 |
| HC5 50% | = | 18.13 |
| HC10 50% | = | 143.58 |
| HC20 50% | = | 1137 |

HR TV = 18.13 = 18 µg/L

The HC5 50% figure was above chronic toxicity figures for *D. magna* and, given the small chronic database, it was preferred to use the acute data for a MR calculation.

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 57554 | 22792.67 | 78400 | 49000 | 37595.94 | 29137.20 |
| 25924.83 | 80241.13 | 68000 | 684.98 | 273.86 | 100 |
| 112000 | 155000 | 406003.42 | 175000 | 477900 | 220000 |
| 150000 | 94000 | 435138.77 | 235000 | 64000 | 279548.06 |
| 100000 | 800000 | 760000 | 450000 | 406000 | 155000 |
| 31600 | 68000 | 440000 | 663294.39 | | |

| | | |
|---|---|---|
| HC1 50% | = | 37.79 |
| HC5 50% | = | 1144 |
| HC10 50% | = | 4969 |
| HC20 50% | = | 21583 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 4.47.

MR TV (HC5 50%) = 1144 ÷ 4.47 = 255.928 = 255 µg/L

However, this TV was not adopted as it was considerably above the acute toxicity values for a range of crustaceans. Therefore, a more protective TV was required. There were two possibilities:

1. to use the HC5 50% but divide it by a default AF of 10 ( = 110 µg/L) or

2. to use the HC1 50% with the ACR (= 4.47 µg/L)

The first method still did not provide adequate protection to the acute toxicity data — so the second method was adopted.

MR TV (HC1 50%) = 37.79 ÷ 4.47 = 8.454 = 8.5 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 8.45 | 255.93 | 1111.63 | 4828.41 |

These were rounded off to

| | | | |
|---|---|---|---|
| 8 | 250 | 1100 | 4800 µg/L |

## Marine
### Fails HR and MR

There were toxicity data for 2 species –a crustacean and a diatom.

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality than this and should therefore be adopted for marine waters.

LR TV = 8.5 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 8.45 | 255.93 | 1111.63 | 4828.41 |

These were rounded off to

| | | | |
|---|---|---|---|
| 8 | 250 | 1100 | 4800 |

# 2,4-dichloroaniline [CAS No. 554-00-7]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 16 007 | 10 138 | 24 596 | 20 782 | 596 | 11 832 | 15 000 |
| 14 078 | 2 348 | 638 | 400 | 2 200 | | |

HC1 50% = 18.54
HC5 50% = 220.51
HC10 50% = 640.58
HC20 50% = 1860.87

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (fish) was 32.18.

MR TV = 220.51 ÷ 32.18 = 6.85 = 6.9 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.576 | 6.852 | 19.906 | 57.827 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.6 | 7 | 20 | 60 |

## Marine
## Fails HR and MR
## LR Calculations

There were only toxicity data for 1 species — an alga. The highest level of TV that can be derived with the available data was a LR (ECL) TV.

LR (ECL) TV = lowest value ÷ 1000

= 1100 µg/L ÷ 1000
= 1.1 µg/L

However, the freshwater MR TV was of higher quality and was therefore adopted for marine waters as an LR (interim).

LR TV = 220.42 ÷ 32.18 = 6.8495 = 6.9 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.5761 | 6.852 | 19.906 | 57.827 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.6 | 7 | 20 | 60 |

# 2,5-dichloroaniline [CAS No. 95-82-9]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (crustacea and algae).

Therefore only a LR (environmental concern level) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2920 µg/L ÷ 1000
= 2.92 µg/L

This was rounded to 3 µg/L

LR (ECL) TV = 3 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 3 µg/L

# 3,4-dichloroaniline [CAS No. 95-76-1]

## Freshwater

### HR Calculations

The data used to derive the TV were:

20 7.54 80 760 3666 2200 2700

HC1 50% = 1.337
HC5 50% = 3.349
HC10 50% = 5.875
HC20 50% = 12.62
HR TV = 3.349 = 3.5 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 1.337 | 3.349 | 5.875 | 12.62 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1.3 | 3 | 6 | 13 µg/L |

## Marine
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 4325.31 | 8246.21 | 5468.09 | 2592.30 | 10850.28 | 2300 |
| 3577.71 | 1369 | 2724.65 | 9500 | 8085.65 | |

| | | |
|---|---|---|
| HC1 50% | = | 868.98 |
| HC5 50% | = | 1497 |
| HC10 50% | = | 1934 |
| HC20 50% | = | 2581 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR

MR TV = 1497 ÷ 10 = 149.7 = 150 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 86.898 | 149.679 | 193.353 | 258.109 |

These were rounded off to

| | | | |
|---|---|---|---|
| 85 | 150 | 190 | 260 µg/L |

# 3,5-dichloroaniline [CAS No. 626-43-7]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (crustacea and alga).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 1120 µg/L ÷ 1000 |
| | = | 1.12 µg/L |

This was rounded to 1 µg/L

| | | |
|---|---|---|
| LR (ECL) TV | = | 1 µg/L |

## Marine

There were only toxicity data for 1 marine species.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2500 µg/L ÷ 1000
= 2.5 µg/L

# Benzidine

## Freshwater

There were no screened toxicity data for freshwater organisms and therefore no data for this chemical in the database. However, there was an un-screened USEPA datum of 2500 µg/L. Therefore a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2500 µg/L ÷ 1000
= 2.5 µg/L

## Marine

There were no toxicity data for marine organisms. Therefore the freshwater TV was adopted for marine waters.

LR TV = 2.5 µg/L

# Dichlorobenzidine

## Freshwater

There were no screened toxicity data for freshwater organisms, and therefore no data in the database. There is however, an unscreened USEPA datum of 500 µg/L. Therefore a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 500 µg/L ÷ 1000
= 0.5 µg/L

## Marine

There were no toxicity data for marine organisms. Therefore the freshwater TV was adopted for marine waters.

LR TV = 0.5 µg/L

# Benzene [CAS No. 71-43-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 91446.25 | 370000 | 13500 | 21800 | 425000 | 33713.34 |
| 31714.09 | 19865.74 | 36900.51 | 12836.78 | 6786.75 | 10300 |
| 28396.49 | 8437.14 | 12900 | 47766.97 | 51299.89 | |

| | | | | | |
|---|---|---|---|---|---|
| 405270.56 | 111101.2 | 710000 | 63268.69 | 42000 | 200000 |
| 1370000 | 100000 | 34000 | 48000 | 71000 | 10000 |
| 130000 | 97274.67 | 117934.64 | 970000 | 34000 | 74000 |
| 29000 | 370000 | 190000 | | | |

HC1 50% = 5838
HC5 50% = 9554
HC10 50% = 12914
HC20 50% = 19463

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The fish ACR for benzene was 1.97 — this was the only ACR and therefore was adopted.

MR TV = 9554 ÷ 1.97 = 4849.746 = 4850 µg/L

However, this TV did not provide adequate protection for the most sensitive acute value of 4600 µg/L. Therefore the default AF of 10 was used rather than the ACR.

MR TV = 9554 ÷ 10 = 955.4

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 583.8 | 955.4 | 1291.4 | 1946.3 |

These were rounded off to

| | | | |
|---|---|---|---|
| 600 | 950 | 1300 | 2000 µg/L |

# Marine

## Fails HR

## MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 14142.14 | 11000 | 8115.65 | 22000 | 40000 | 88572.03 |
| 21000 | 95247.05 | 20000 | 33000 | 7878.60 | 924000 |
| 196568.55 | 165000 | 14832.40 | | | |

HC1 50% = 4740
HC5 50% = 7192
HC10 50% = 9282
HC20 50% = 13136

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The fish ACR for benzene was 1.97 — this was the only ACR and therefore was adopted.

MR TV = 7192 ÷ 1.97 = 3650.76 = 3650 µg/L

However, this TV did not provide adequate protection for the most sensitive chronic value (an Australian species). Therefore the default AF of 10 was used rather than the ACR.

MR TV = 7192 ÷ 10 = 719.2 µg/L

This still did not provide adequate protection so the HC1 50% and the default AF were used to derive the TV.
Therefore MR TV = 4740 ÷ 10 = 474 = 500 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 474.0 | 719.2 | 928.2 | 1313.6 |

These were rounded off to

500 700 900 1300 µg/L

# Toluene [CS No. 108-88-3]
## Fresh and Marine water
### Fails HR & MR
### LR (Interim) Calculations using QSAR derived chronic toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 273000 | 15400 | 41400 | 38700 | 37900 | 16100 |
| 3340 | 305000 | 31600 | 3690 | 3440 | 4950 |
| 2660 | 4250 | 4330 | 1730 | 4700 | 3300 |
| 5220 | 3200 | | | | |

HC1 50% = 1139
HC5 50% = 1762
HC10 50% = 2302
HC20 50% = 3312

LR (Interim) TV (HC5 50%) = 1762 ÷ 10 = 175 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 113.9 | 176.2 | 230.2 | 331.2 |

These were rounded off to

110 180 230 330 µg/L

# Ethylbenzene [CAS No. 100-41-4]
## Fresh and Marinewater
### Fails HR and MR
### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1000 | 9550 | 8070 | 1850 | 1730 | 2690 |
| 1120 | 1710 | 2170 | 862 | 2310 | 1330 |
| 2520 | 142000 | 25700 | 23100 | 6142 | 166000 |
| 16800 | 17000 | | | | |

HC1 50% = 488.96

HC5 50% = 790.88
HC10 50% = 1061
HC20 50% = 1584

LR (Interim) TV (HC5 50%) = 790.88 ÷ 10 = 80 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 48.896 | 79.088 | 106.1 | 158.4 |

These were rounded off to

| | | | |
|---|---|---|---|
| 50 | 80 | 110 | 160 µg/L |

# o-xylene [CAS No. 95-47-6]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 16 100 | 16 100 | 16 100 | 7 821.76 | 16 299.38 |
| 12 000 | 3 488.08 | 4 700 | 73 000 | |

HC1 50% = 1995
HC5 50% = 3533
HC10 50% = 4665
HC20 50% = 6440

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 3533 ÷ 10 = 353.3 = 355 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 199.5 | 353.3 | 466.5 | 644 |

These were rounded off to

| | | | |
|---|---|---|---|
| 200 | 350 | 470 | 640 µg/L |

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 291 000 | 16 700 | 45 000 | 41 900 | 40 900 | 17 100 | 3 520 |
| 328 000 | 33 900 | 3 920 | 3 660 | 5 310 | 2 790 | 4 430 |
| 4 610 | 1 850 | 4 990 | 3 440 | 5 530 | | |

HC1 50% = 1196
HC5 50% = 1882
HC10 50% = 2484
HC20 50% = 3625

LR (Interim) TV (HC5 50%) = 1882 ÷ 10 = 190 µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

MR TV = 3533 ÷ 10 = 353.3 = 355 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 199.5 | 353.3 | 466.5 | 644 |

These were rounded off to

200 350 470 640 µg/L

# m-xylene [CAS No. 108-38-3]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 129000 | 8870 | 23900 | 21400 | 20000 | 7310 |
| 4900 | 151000 | 15300 | 1670 | 1560 | 2450 |
| 995 | 1510 | 1970 | 780 | 2090 | 1170 |
| 2270 | | | | | |

HC1 50% = 467.16
HC5 50% = 762.89
HC10 50% = 1029.95
HC20 50% = 1549.62

LR (Interim) TV (HC5 50%) = 762.89 ÷ 10 = 76 = 75 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 46.716 | 76.289 | 102.995 | 154.962 |

These were rounded off to

50 75 100 150 µg/L

# *p*-xylene [CAS No. 106-42-3]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 2600 | 8800 | 8494 | 3200 | 88100 |

| | | |
|---|---|---|
| HC1 50% | = | 1352 |
| HC5 50% | = | 1964 |
| HC10 50% | = | 2468 |
| HC20 50% | = | 3368 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 1964 ÷ 10 = 196.4 = 196 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 135.2 | 196.4 | 246.8 | 336.8 |

These were rounded off to

| | | | |
|---|---|---|---|
| 140 | 200 | 250 | 340 µg/L |

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 142 000 | 9 550 | 25 700 | 23 100 | 21 800 | 8 070 | 1 470 |
| 166 000 | 16 800 | 1 850 | 1 730 | 2 690 | 1 120 | 1 710 |
| 2 170 | 862 | 2310 | 1 330 | 2 520 | | |

| | | |
|---|---|---|
| HC1 50% | = | 493.79 |
| HC5 50% | = | 799.74 |
| HC10 50% | = | 1074 |
| HC20 50% | = | 1605 |

LR (Interim) TV (HC5 50%) = 799.74 ÷ 10 = 80 µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

LR TV = 1964 ÷ 10 = 196.4 = 196 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 135.2 | 196.4 | 246.8 | 336.8 |

These were rounded off to

| | | | |
|---|---|---|---|
| 140 | 200 | 250 | 340 µg/L |

# Isopropylbenzene (Cumene, 2-phenyl-propane) [CAS No. 98-82-8]

## Freshwater and Marinewater

### Fails HR and MR

### LR (Interim) Calculations based on QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 61500 | 5100 | 13700 | 11800 | 10600 | 3330 | 2600 |
| 75000 | 7450 | 763 | 712 | 1220 | 375 | 538 |
| 896 | 351 | 931 | 417 | 991 | | |

| | | |
|---|---|---|
| HC1 50% | = | 178.9 |
| HC5 50% | = | 304.6 |
| HC10 50% | = | 422.0 |
| HC20 50% | = | 657.5 |

LR (Interim) TV (HC5 50%) = 305 ÷ 10 = 30 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 17.89 | 30.46 | 42.2 | 65.75 |

These were rounded off to

| | | | |
|---|---|---|---|
| 20 | 30 | 40 | 70 µg/L |

# Naphthalene [CAS No. 91-20-3]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 27 | 33000 | 5010 | 7464 | 2570 | 13000 | 2800 |
| 14450 | 3930 | 67800 | 2600 | 2113 | 5052 | |

**NOTE:** This contains data greater than the aqueous solubility (Aq sol x 2 = 60 000). Data above the aqueous solubility were removed and recalculated below.

| | | | | | |
|---|---|---|---|---|---|
| 680 | 2421.58 | 2223.25 | 4788.49 | 2200 | 1843.91 |
| 3930 | 27 | 2800 | 14059.13 | 5009.99 | 33000 |

| | | |
|---|---|---|
| HC1 50% | = | 24.66 |

| | | |
|---|---|---|
| HC5 50% | = | 162.40 |
| HC10 50% | = | 370.16 |
| HC20 50% | = | 854.09 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 162.40 ÷ 10 = 16.24 = 16 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2.466 | 16.24 | 37.02 | 85.41 |

These were rounded off to

| | | | |
|---|---|---|---|
| 2.5 | 16 | 37 | 85 µg/L |

# Marine

## Fails HR

## MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 5300 | 750 | 1124.89 | 17736.91 | 1400 |
| 2336.77 | 700 | 1390 | 5087.4 | 1047.12 |
| 62833.02 | 3800 | | | |

**NOTE:** The above contains data greater than twice the aqueous solubility (ie. 60 000 µg/L). Data above the aqueous solubility were removed and recalculated below.

| | | | | |
|---|---|---|---|---|
| 5300 | 750 | 1124.89 | 17736.91 | 1400 |
| 2336.78 | 2700 | 1390 | 5087.40 | 1047.12 |
| 57000 | 3800 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 500.25 |
| HC5 50% | = | 724.74 |
| HC10 50% | = | 909.32 |
| HC20 50% | = | 1238.26 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV (HC1 50%) = 500.25 ÷ 10 = 50.025 = 50.03 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the TV did not provide adequate protection (a chronic crab value was below the TV).

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 50.025 | 72.474 | 90.932 | 123.826 |

These were rounded off to

| | | | |
|---|---|---|---|
| 50 | 70 | 90 | 120 µg/L |

# Anthracene [CAS No. 120-12-7]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 0.63 | 2.94 | 20500 | 2360 | 6350 | 5070 |
| 4240 | 1030 | 26900 | 2580 | 237 | 221 |
| 436 | 110 | 278 | 107 | 279 | 85.2 |
| 286 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.126 |
| HC5 50% | = | 3.622 |
| HC10 50% | = | 15.55 |
| HC20 50% | = | 68.71 |

NOTE: This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 0.126 ÷ 10 = 0.013 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because anthracene can bioaccumulate.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.01256 | 0.3622 | 1.5545 | 6.871 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.4 | 1.5 | 7 µg/L |

# Phenanthrene [CAS No. 85-01-8]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 42.33 | 32 | 60 | 150 | 120 | 232 |
| 216 | 429 | 107 | 272 | 105 | 273 |
| 83.1 | 280 | 20100 | 2330 | 6260 | 4990 |
| 4170 | 1010 | 26400 | 2530 | | |

HC1 50% = 19.88
HC5 50% = 38.21
HC10 50% = 56.99
HC20 50% = 98.20

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 19.88 ÷ 10 = 1.99ug/L

**NOTE:** The data above contains data greater the aqueous solubility cut-off (2 x aq. sol.) was 1632. It was recalculated using this reduced database below.

| | | | | | | |
|---|---|---|---|---|---|---|
| 42.33 | 32 | 60 | 150 | 120 | 232 | 216 |
| 429 | 107 | 272 | 105 | 273 | 83.1 | 280 |

HC1 50% = 5.73
HC5 50% = 22.94
HC10 50% = 41.70
HC20 50% = 75.79

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value is used to calculate the TV.

LR (Interim) TV (HC1 50%) = 5.73 ÷ 10 = 0.6 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.573 | 2.294 | 4.17 | 7.579 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.6 | 2 | 4 | 8 µg/L |

# Fluoranthene [CAS No. 206-44-0]

## Fresh and Marine water

### Fails Level HR and MR

### LR (Interim) Calculations using QSAR derived chronic toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 12.32 | 90 | 18 | 30 | 940 | 2530 |
| 1890 | 2530 | 287 | 27.2 | 789 | 65.7 |
| 61.3 | 138 | 20.9 | 77.2 | 29.3 | 74.4 |
| 74.9 | 16.3 | 6080 | 8520 | | |

**NOTE:** The data included toxicity data greater than twice the aqueous solubility. These data were removed and the TV recalculated below.

| | | | | | |
|---|---|---|---|---|---|
| 12.32 | 90 | 18 | 30 | 287 | 27.2 |
| 65.7 | 61.3 | 138 | 20.9 | 77.2 | 29.3 |
| 74.9 | 16.3 | 74.4 | | | |

HC1 50% = 10.01
HC5 50% = 13.75
HC10 50% = 16.70

HC20 50% = 21.75

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 10.01 ÷ 10 = 1 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 1.001 | 1.375 | 1.67 | 2.175 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1 | 1.4 | 1.7 | 2 µg/L |

# Benzo[a]pyrene [CAS No. 50-32-8]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1650 | 356 | 957 | 664 | 483 | 72.1 | 10.4 |
| 2480 | 222 | 16.5 | 15.4 | 40.3 | 3.11 | 3.42 |
| 19.4 | 7.21 | 18.1 | 2.66 | 17.3 | 6.3 | 5.00 |

HC1 50% = 1.18
HC5 50% = 2.44
HC10 50% = 3.82
HC20 50% = 7.02

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 1.18 ÷ 10 = 0.1 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.118 | 0.244 | 0.382 | 0.702 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 0.2 | 0.4 | 0.7 µg/L |

# Nitrobenzene [CAS No. 98-95-3]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 6000 | 43000 | 106359.05 | 29849.62 | 18000 | 22234.80 |

142800

| | | |
|---|---|---|
| HC1 50% | = | 2662 |
| HC5 50% | = | 6314 |
| HC10 50% | = | 9431 |
| HC20 50% | = | 14749 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (crustaceans) was 11.48.

MR TV = 6314 ÷ 11.48 = 550 = 550 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 231.8815331 | 550 | 821.5156794 | 1284.756098 |

These were rounded off to

| | | | |
|---|---|---|---|
| 230 | 550 | 820 | 1300 µg/L |

## Marine
### Fails HR and MR

There were only acute toxicity data for 2 species which belonged to 2 taxonomic group2 (fish and alga).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 10 300 µg/L ÷ 1000 |
| | = | 10.3 µg/L |

However, the MR TV for freshwater could be adopted as a LR TV.

LR TV = 6314 ÷ 11.48 = 550 = 550 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 231.8815331 | 550 | 821.5156794 | 1284.756098 |

These were rounded off to

| | | | |
|---|---|---|---|
| 230 | 550 | 820 | 1300 |

# 1,2-dinitrobenzene [CAS No. 528-29-0]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 2 species, a fish and a protozoan.

ThereforeOnly a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 600 µg/L ÷ 1000
= 0.6 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted as the LR TV for marine waters.

Therefore LR (ECL) TV = 0.6 µg/L

# 1,3-dinitrobenzene [CAS No. 99-65-0]

## Freshwater

### Fails HR and MR

There were only chronic data for 3 species which belonged to 3 taxonomic groups (fish, crustacea and alga). Therefore a LR (interim) TV could be derived using chronic data.

There were only acute toxicity data for 6 species which belonged to 3 taxonomic groups (fish, crustacea and alga). Therefore a LR (interim) TV could be derived using acute data.

LR (interim) TV = lowest value ÷ 20
= 260 ÷ 20
= 13 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted for marine waters.

LR TV = 13 µg/L

# 1,4-dinitrobenzene (ρ dinitrobenzene) [CAS No. 100-25-4]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 4 species, which belonged to 3 taxonomic group.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 603 µg/L ÷ 1000
= 0.603 µg/L

This was rounded to 0.6 µg/L

LR (ECL) TV = 0.6 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

ECL = 0.6 µg/L

# 1,3,5-trinitrobenzene
## Freshwater
### Fails HR and MR

There were only chronic data for 3 species which belonged to 3 taxonomic groups (fish, crustacea and alga). Therefore a LR (interim) TV could be derived using chronic data.

There were only acute toxicity data for 6 species which belonged to 3 taxonomic groups (fish, crustacea and alga). Therefore a LR (interim) TV could be derived using acute data.

LR (interim) TV = lowest value ÷ 20
= 80 ÷ 20
= 4 µg/L

## Marine
There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 4 µg/L

# 1-methoxy-2-nitrobenzene [CAS No. 91-23-6]
## Freshwater
### Fails HR and MR

There were only chronic toxicity data for 1 species, a crustacean. There were only acute toxicity data for 2 species, a fish and a green alga. By combining the data there were values for a fish, a crustacean and green alga.

ThereforeOnly a LR (interim) TV could be derived.

LR (Interim) TV = lowest value ÷ 100
= 13,000 µg/L ÷ 100
= 130 µg/L

## Marine
There were no toxicity data for marine species. Therefore the freshwater interim WQG was adopted as the LR TV for marine waters.

Therefore LR TV = 130 µg/L

# 1-methoxy-4 nitrobenzene [CAS No. 100-17-4]
## Freshwater
### Fails HR and MR

There were only toxicity data for 2 species, 1 green alga and 1 crustacean.

ThereforeOnly a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ AF
= 3200 µg/L ÷ 200
= 16 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted as the LR TV for marine waters.

Therefore LR TV = 16 µg/L

# 1-chloro-2-nitrobenzene [CAS No. 88-73-3]

## Freshwater

### Fails HR and MR

There were chronic toxicity data for 1 species, a crustacean. There were acute toxicity data for 2 species, a crustacean and an alga

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 3000 µg/L ÷ 200
= 15 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) was adopted for marine waters.

ECL = 15 µg/L

# 1-chloro-3-nitrobenzene [CAS No. 121-73-3]

## Freshwater

### Fails HR and MR

There were chronic toxicity data for 1 species — a green alga. There were acute toxicity data for 3 species that belonged to 2 taxonomic groups (fish and crustacea). By combining the data there were data for 4 species that belonged to 3 taxonomic groups (alga, crustacea and fish). Therefore a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 1200 ÷ 100
= 12 µg/L

## Marine

### Fails HR and MR

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted for marine waters.

LR TV = 12 µg/L

# 1-chloro-4-nitrobenzene [CAS No. 100-00-5]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 2 taxonomic groups — an crustacean and an alga. There was a chronic toxicity value for a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest chronic value ÷ 200
= 190 ÷ 200
= 0.95
≈ 1 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR TV = 1 µg/L

# 1-chloro-2,4-dinitrobenzene [CAS No. 97-00-7]

## Freshwater

### Fails HR and MR

There were only toxicity data for 2 species, 1 crustacean and 1 alga.

ThereforeOnly a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 800 µg/L ÷ 200
= 4 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted as the LR TV for marine waters.

Therefore LR TV = 4 µg/L

# 1,2-dichloro-3-nitrobenzene [CAS No. 3209-22-1]

## Freshwater

### Fails HR and MR

There were only toxicity data for 2 species, 1 crustacean and 1 alga.

ThereforeOnly a LR (ECL) could be derived.

LR (ECL) TV = lowest value ÷ 200
= 2900 µg/L ÷ 200
= 14.5 µg/L
≈ 15 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted as the LR TV for marine waters.

Therefore LR TV = 15 µg/L

# 1,3-dichloro-5-nitrobenzene [CAS No. 618-62-2]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (crustacea and a green algae).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 600 µg/L ÷ 200
= 3 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

ECL = 3 µg/L

# 1,4-dichloro-2-nitrobenzene [CAS No. 89-61-2]

## Freshwater

### Fails HR and MR

There were only toxicity data for 2 species, which belonged to 2 taxonomic groups (crustacea and green algae).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 2100 µg/L ÷ 200
= 10 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR TV = 10 µg/L

# 2,4-dichloro-2-nitrobenzene [CAS No. 611-06-3]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (crustacea and green algae).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 2400 µg/L ÷ 200
= 12 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

ECL = 12 µg/L

# 1, 2, 4, 5-tetrachloro-3-nitrobenzene [CAS No. 117-18-0]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 6 species, 3 fish, 2 crustaceans and 1 mollusc.

Therefore only a LR (environmental concern level) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 270 µg/L ÷ 1000
= 0.27 µg/L
≈ 0.3 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted as the LR TV for marine waters.

Therefore LR TV = 0.3 µg/L

# 1,5-dichloro-2,4-dinitrobenzene [3698-83-7]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 5 species of fish

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 26 µg/L ÷ 1000
= 0.026 µg/L

Which was rounded up to 0.03 µg/L

LR (ECL) TV = 0.03 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.03 µg/L

# ,3,5-trichloro-2,4-dinitrobenzene

## Freshwater

### Fails HR and MR

There were no chronic toxicity data. There were only acute toxicity data for 1 species — a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 222 µg/L ÷ 1000
= 0.222 µg/L

Which was rounded up to 0.2 µg/L

LR (ECL) TV = 0.2 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.2 µg/L

# 1-fluoro-4-nitrobenzene [CAS No. 350-46-9]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species, a fish.

ThereforeOnly a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 28400 µg/L ÷ 1000
= 28.4 µg/L
≈ 28 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR TV was adopted as the LR TV for marine waters.

Therefore LR TV = 28 µg/L

# 2-nitrotoluene (1-methyl-2-nitrobenzene) [CAS No. 88-72-2]

## Freshwater

### Fails HR and MR

There were only toxicity data for 3 species, 1 fish (acute), 1 crustacean (acute)and 1 alga (chronic).

ThereforeOnly a LR (Interim) TV could be derived.

| | | |
|---|---|---|
| LR (Interim) TV | = | lowest value ÷ 100 |
| | = | 11 000 µg/L ÷ 100 |
| | = | 110 µg/L |

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (interim)TV was adopted as the LR TV for marine waters.

| | | |
|---|---|---|
| Therefore LR TV | = | 110 µg/L |

# 3-nitrotoluene (1-methyl-3-nitrobenzene) [CAS No. 99-08-1]

## Freshwater

### Fails HR and MR

There were only toxicity data for 3 species, 1 fish (acute), 1 crustacean (acute) and 1 alga (chronic).

ThereforeOnly a LR (Interim) TV could be derived.

| | | |
|---|---|---|
| LR (Interim) TV | = | lowest value ÷ 100 |
| | = | 7500 µg/L ÷ 100 |
| | = | 75 µg/L |

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (interim) TV was adopted as the LR TV for marine waters.

| | | |
|---|---|---|
| Therefore LR TV | = | 75 µg/L |

# 4-nitrotoluene (1-methyl-4-nitrobenzene) [CAS No. 99-99-0]

## Freshwater

### Fails HR and MR

There were only toxicity data for 3 species, 1 fish (acute), 1 crustacean (acute) and 1 alga (chronic).

ThereforeOnly a LR (Interim) TV could be derived.

| | | |
|---|---|---|
| LR (Interim) TV | = | lowest value ÷ 100 |
| | = | 12 100 µg/L ÷ 100 |
| | = | 121 µg/L |
| | = | 120 µg/L |

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (interim) TV was adopted as the LR TV for marine waters.

Therefore ECL = 120 µg/L

# 2,3-dinitrotoluene [CAS No. 602-01-7]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data. There was only acute toxicity data for 3 species that belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 330 µg/L ÷ 1000
= 0.33 µg/L

## Marine

There were no chronic toxicity data. There was only acute toxicity data for 2 species that belonged to 2 taxonomic groups (fish, and crustacea).

Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 400 µg/L ÷ 1000
= 0.4 µg/L

# 2,4-dinitrotoluene [CAS No. 121-14-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 17663 | 6562 | 23452 | 33000 | 31553 | 9600 | 1900 |
| 6200 | 1833 | 3000 | 1600 | 3800 | 255 | 1006 |

HC1 50% = 103.9
HC5 50% = 426.24
HC10 50% = 802.2
HC20 50% = 1581

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The fish ACR was 6.33.

MR TV (HC1 50%) = 103.9 ÷ 6.33 (ACR) = 16.41 = 16 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the HC5 50% figure did not provide adequate protection to chronic toxicity data.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 16.42338073 | 67.33649289 | 126.7298578 | 249.7630332 |

These were rounded off to

| | | | |
|---|---|---|---|
| 16 | 65 | 130 | 250 µg/L |

## Marine

There is no toxicity data for marine species. Therefore the freshwater MR TV was adopted for marinewaters.

LR TV (HC1 50%) = 16 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 16.42338073 | 67.33649289 | 126.7298578 | 249.7630332 |

These were rounded off to

| | | | |
|---|---|---|---|
| 16 | 65 | 130 | 250 µg/L |

# 2,6-dinitrotoluene [CAS No. 606-20-2]

## Freshwater

### Fails HR and MR

There were chronic toxicity data for 2 species that belonged to 2 taxonomic groups (crustacean and algae).

∴ Only a LR (ECL) TV could be derived.

An AF of 200 was used because of chronic data (limited)

LR (ECL) TV = lowest value ÷ 200
= 60 µg/L ÷ 200
= 0.3 µg/L

## Marine

There were no chronic or acute toxicity data.
Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 60 µg/L ÷ 200
= 0.3 µg/L

# 2,4,6-trinitrotoluene (2-methyl-1, 3, 5-trinitrobenzene) [CAS No. 118-96-7]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 2400 | 2486.79 | 1200 | 2190.82 | 4451.15 | 6500 |
| 24800 | 4900 | 9100 | 3346.37 | | |

HC1 50% = 1004
HC5 50% = 1371
HC10 50% = 1648
HC20 50% = 2107

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 1371 ÷ 10 = 137.1 = 140 µg/L
The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 100.4 | 137.1 | 164.8 | 210.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 100 | 140 | 160 | 210 µg/L |

## Marine

There were no toxicity data for marine species. Therefore the freshwater MR TV was adopted for marine waters.

LR TV = 140 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 100.4 | 137.1 | 164.8 | 210.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 100 | 140 | 160 | 210 µg/L |

# 1,2-dimethyl-3-nitrobenzene [CAS No. 83-41-0]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species — a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000

= 4200 µg/L ÷ 1000
= 4.2 µg/L

This was rounded to 4 µg/L

LR (ECL) TV = 4 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV adopted for marine waters.

LR TV = 4 µg/L

# 1,2-dimethyl-4-nitrobenzene [CAS No. 99-51-4]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species — a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 16 000 µg/L ÷ 1000
= 16 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR TV = 16 µg/L

# 4-chloro-3-nitrotoluene (1-chloro-4-methyl-2-nitrobenzene) [CAS No. 89-60-1]

## Freshwater

### Fails HR and MR

There were only chronic toxicity data for 1 species, (a crustacea) and acute toxicity data for 1 species (an alga).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) = lowest value ÷ 200
= 300 µg/L ÷ 200
= 1.5 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 1.5 µg/L

# Chlorobenzene [CAS No. 108-90-7]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 4800 | 2900 | 3890 | 320 | 43588.99 | 246000 |
| 14900 | 40000 | 36800 | 14300 | 20 310 | 280000 |
| 28800 | 3280 | 3060 | 4540 | 3480 | 3850 |
| 1540 | 4150 | 2700 | 4570 | 253.4 | |

| | | |
|---|---|---|
| HC1 50% | = | 165.61 |
| HC5 50% | = | 544.99 |
| HC10 50% | = | 970.09 |
| HC20 50% | = | 1888.89 |

LR (Interim) TV (HC5 50%) = 544.99 ÷ 10 = 54.49 = 54 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 16.561 | 54.499 | 97.009 | 188.889 |

These were rounded off to

| | | | |
|---|---|---|---|
| 15 | 55 | 100 | 190 µg/L |

# 1,2-dichlorobenzene [CAS No. 95-50-1]

## Freshwater

### Fails HR

### MR Calculations

There were chronic toxicity data for 4 species which belonged to 3 taxonomic groups (fish, crustacea and green algae). There were acute toxicity data for 7 species which belonged to 3 taxonomic groups (fish, crustaceans and insects). In this case the toxicity data for the green algae were combined with the acute toxicity data to derive a MR TV using the statistical extrapolation method. The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 6800 | 9460.48 | 2294.85 | 34777.92 | 4793 |
| 1761.14 | 12000 | 13500 | 2200 | |

| | | |
|---|---|---|
| HC1 50% | = | 1160 |
| HC5 50% | = | 1641 |
| HC10 50% | = | 2029 |
| HC20 50% | = | 2710 |

**NOTE:** Because this TV is derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There is no ACR.

MR TV (HC5 50%) = 1641 ÷ 10 = 164.1 = 164 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 116 | 164.1 | 203 | 271 |

These were rounded off to

120 160 200 270 µg/L

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

| | | | | | |
|---|---|---|---|---|---|
| 388.99 | 5000 | 7600 | 7600 | 7600 | 7600 |
| 116000 | 8750 | 23600 | 20700 | 19000 | 13 500 |
| 2200 | 139000 | 13900 | 1470 | 1370 | 2250 |
| 1170 | 1730 | 681 | 1820 | 909 | 1950 |
| 1540 | | | | | |

HC1 50% = 365.6
HC5 50% = 620.2
HC10 50% = 857.0
HC20 50% = 1331

LR (Interim) TV (HC5 50%) = 620.2 ÷ 10 = 62 = 60 µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

Therefore LR TV = 164 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 116 | 164.1 | 203 | 271 |

These were rounded off to

120 160 200 270 µg/L

# 1,3-dichlorobenzene [CAS No. 541-73-1]

## Freshwater

### Fails HR

### MR Calculations

| | | | | |
|---|---|---|---|---|
| 5000 | 8044.62 | 2244.99 | 30000 | 114000 |

HC1 50% = 1179
HC5 50% = 1905
HC10 50% = 2555
HC20 50% = 3810

**NOTE:** Because this TV is derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 7.35.

MR TV (HC5 50%) = 1905 ÷ 7.35 = 259.18 = 260 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 160.4081633 | 259.1836735 | 347.6190476 | 518.3673469 |

These were rounded off to

160 260 350 520 µg/L

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1000 | 454.97 | 846 | 1210 | 1130 | 1880 |
| 911 | 1420 | 1480 | 707 | 1590 | 96100 |
| 7550 | 20300 | 17700 | 19000 | 116000 | 11600 |
| 11400 | | | | | |

HC1 50% = 272.78
HC5 50% = 464.79
HC10 50% = 644.03
HC20 50% = 1003.87

LR (Interim) TV (HC5 50%) = 464.79 ÷ 10 = 46.48 = 46 µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

LR TV (HC5 50%) = 1905 ÷ 7.35 = 259.18 = 260 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 160.4081633 | 259.1836735 | 347.6190476 | 518.3673469 |

These were rounded off to

160 260 350 520 µg/L

# 1,4-dichlorobenzene [CAS No. 106-46-7]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 4250 | 2512.38 | 4300 | 1178.98 | 8226.14 | 2896 |
| 700 | 1200 | 13000 | 28000 | | |

HC1 50% = 510.5
HC5 50% = 764.2
HC10 50% = 978.2
HC20 50% = 1369

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 13.26.

MR TV (HC5 50%) = 764.2 ÷ 13.26 = 57.63 = 60µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 38.5 | 57.63198 | 73.77225 | 103.2338 |

These were rounded off to

40 60 75 100 µg/L

## Marine

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 114000 | 8620 | 23200 | 20300 | 18600 | 6290 | 570 |
| 136000 | 13700 | 1440 | 1350 | 2210 | 297.76 | 1140 |
| 1690 | 320 | 1780 | 887 | 1910 | 650 | 31 |

HC1 50% = 29.86
HC5 50% = 125.76
HC10 50% = 251.44
HC20 50% = 558.2

LR (Interim) TV (HC5 50%) = 125.76 ÷ 10 = 12.5 µg/L

However, the freshwater TV was of higher quality than this and should therefore be adopted for marine waters.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 38.5 | 57.63198 | 73.77225 | 103.2338 |

These were rounded off to

40 60 75 100 µg/L

# 1,2,3-trichlorobenzene [CAS No. 87-61-6]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 3100 | 710 | 279.1 | 1601.97 | 1700 | 900 |

HC1 50% = 69.42
HC5 50% = 222.13
HC10 50% = 366.73
HC20 50% = 607.2

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (crustaceans) was 22.44.

MR TV (HC1 50%) = 69.42 ÷ 22.44 = 3.0936 = 3.1 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because 1,2,3-trichlorobenzene can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.093582888 | 9.898841355 | 16.34135472 | 27.05882353 |

These were rounded off to

3 10 16 30 µg/L

# Marine

## Fails HR and MR

## LR (Interim) Calculation using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 250 | 34.64 | 110 | 25 | 3790 | 10200 |
| 8390 | 7210 | 1940 | 4640 | 445 | 415 |
| 775 | 243 | 523 | 532 | 189 | 553 |

HC1 50% = 9.88
HC5 50% = 38.94
HC10 50% = 74.66
HC20 50% = 156.48

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 9.88 ÷ 10 = 0.988 = 1 µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

Therefore LR TV = 3.1 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.093582888 | 9.898841355 | 16.34135472 | 27.05882353 |

These were rounded off to

3 10 16 30 µg/L

# 1,2,4-trichlorobenzene [CAS No. 120-82-1]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1100 | 6300 | 1748.44 | 3268.30 | 2072.86 | 2868.15 |
| 2668.15 | 3020 | 930 | 3160 | | |

| | | |
|---|---|---|
| HC1 50% | = | 456.3 |
| HC5 50% | = | 892.4 |
| HC10 50% | = | 1193 |
| HC20 50% | = | 1606 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 5.32.

MR TV (HC1 50%) = 456.3 ÷ 5.32 = 85.77 = 85 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because 1,2,4-trichlorobenzene can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 85.778 | 167.735 | 224.320 | 301.805 |

These were rounded off to

85 170 220 300 µg/L

## Marine

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 6000 | 5095.5 | 1100 | 2600 | 540 |
| 890 | 930 | 8750 | 2990 | 3650 |
| 2600 | 3320 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 117.89 |
| HC5 50% | = | 424.0 |
| HC10 50% | = | 736.2 |
| HC20 50% | = | 1282 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 5.32.

MR TV (HC1 50%) = 117.89 ÷ 5.32 = 22.16 = 22 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 22.15977444 | 79.69924812 | 138.3834586 | 240.9774436 |

These were rounded off to

20 80 140 240 µg/L

# 1,3,5-trichlorobenzene [CAS No. 108-70-3]

## Fresh and Marinewater

### Fails HR and MR

### LR (Interim) Calculation using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1000 | 34100 | 3520 | 9490 | 7750 | 6640 | 1760 | 228 |
| 43700 | 4230 | 403 | 376 | 709 | 159 | 215 | 474 |
| 183 | 480 | 167 | 499 | | | | |

HC1 50% = 73.7
HC5 50% = 129.6
HC10 50% = 183.1
HC20 50% = 293.0

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) (HC1 50%) TV = 73.7 ÷ 10 = 7.5 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 7.37 | 12.96 | 18.31 | 29.3 |

These were rounded off to

8 13 20 30 µg/L

# 1, 2, 3, 4-tetrachlorobenzene [CAS No. 634-66-2]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 100 | 23.45 | 859 | 96.4 | 197 | 184 |
| 376 | 82.5 | 231 | 250 | 230 | 64.1 |
| 233 | 2160 | 5820 | 4560 | 3750 | 2200 |

HC1 50% = 20.57
HC5 50% = 39.74

HC10 50% = 58.16
HC20 50% = 95.91

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 20.57 ÷ 10 = 2.06 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2.057 | 3.974 | 5.816 | 9.591 |

These were rounded off to

2 4 6 10 µg/L

# 1,2,3,5-tetrachlorobenzene [CAS No. 634-90-2]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 825 | 92.1 | 189 | 176 | 363 | 61.4 | 78.5 |
| 222 | 85.1 | 221 | 60.9 | 224 | 2100 | 4420 |
| 3620 | 2120 | | | | | |

HC1 50% = 31.46
HC5 50% = 50.67
HC10 50% = 67.82
HC20 50% = 100.86

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 31.46 ÷ 10 = 3 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.146 | 5.067 | 6.782 | 10.086 |

These were rounded off to

3 5 7 10 µg/L

# 1,2,4,5-Tetrachlorobenzene [CAS No. 95-94-3]

## Fresh and Marine water

### Fails HR and MR

### LR (Interim) Calculations using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 90 | 105.7 | 212.9 | 198.7 | 404 | 253.7 |
| 70.8 | 91.3 | 250.2 | 96.0 | 249 | 70.8 |

| | | |
|---|---|---|
| HC1 50% | = | 53.65 |
| HC5 50% | = | 66.01 |
| HC10 50% | = | 74.95 |
| HC20 50% | = | 89.09 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 53.65 ÷ 10 = 5.5 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 5.365 | 6.601 | 7.495 | 8.909 |

These were rounded off to

5 7 8 9 µg/L

# Pentachlorobenzene [CAS No. 608-93-5]

## Fresh and Marinewater

### Fails HR and MR

### Calculations for LR (interim) TV using QSAR derived toxicity data

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 34 | 31.41 | 60.73 | 7260 | 1130 | 3040 |
| 2270 | 1770 | 342 | 32.3 | 10200 | 943 |
| 78.3 | 73.1 | 165 | 24.7 | 92.0 | 34.8 |
| 89.2 | 19.2 | 88.4 | | | |

**NOTE:** The above data contains a number of data that are greater than twice the aqueous solubility (i.e. 480 µg/L- the solubility cut-off for toxicity data). These data were removed and the remaining data put through the Burr distribution method.

| | | | | | |
|---|---|---|---|---|---|
| 34 | 31.41 | 60.73 | 342 | 32.3 | 78.3 |
| 73.1 | 165 | 24.7 | 92.0 | 34.8 | |
| 89.2 | 19.2 | 88.4 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 16.05 |
| HC5 50% | = | 21.03 |
| HC10 50% | = | 24.82 |
| HC20 50% | = | 52.79 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 16.05 ÷ 10 = 1.6 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 1.605 | 2.103 | 2.482 | 5.279 |

These were rounded off to

1.5 2 2.5 5 µg/L

# Hexachlorobenzene [118-74-1]

## Fresh and Marine water

### Fails HR and MR

### Calculations for LR (interim) TV using QSAR derived data

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 2920 | 572 | 1540 | 1090 | 811 |
| 131 | 10.3 | 4320 | 390 | 30 |
| 28 | 70 | 6.24 | 7.06 | 35.2 |
| 13.2 | 33.3 | 5.48 | 32.2 | 1.8 |

**NOTE:** The above data contains a number of data that were greater than twice the aqueous solubility (i.e. 12 µg/L- the solubility cut-off for toxicity data). These data were removed and the remaining data put through the Burr distribution method.

| | | | | |
|---|---|---|---|---|
| 10.3 | 6.24 | 7.06 | 5.48 | 1.8 |

HC1 50% = 0.534
HC5 50% = 1.40
HC10 50% = 2.125
HC20 50% = 3.22

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

LR (Interim) TV (HC1 50%) = 0.53 ÷ 10 = 0.05 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0534 | 0.14 | 0.2125 | 0.322 |

These were rounded off to

0.05 0.1 0.2 0.3 µg/L

# 1-Chloronaphthalene [90-13-1]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, a fish and a crustacean.

ThereforeOnly a LR(ECL) TV could be derived.

LR(ECL) TV = lowest value ÷ 1000
= 1600 µg/L ÷ 1000
= 1.6 µg/L

## Marine

There were only acute toxicity data for 1 species, a fish.

Therefore Only a LR(ECL) TV could be derived.

LR(ECL) TV = lowest value ÷ 1000
= 690 µg/L ÷ 1000
= 0.69 µg/L

This was rounded off to 0.7 µg/L

Therefore LR(ECL) TV = 0.7 µg/L

# Capacitor 21 [CAS No. 66419-38-3]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 8 species which belonged to 2 different taxonomic groups.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1.5 µg/L ÷ 1000
= 0.0015 µg/L

This was rounded to 0.002 µg/L

LR (ECL) TV = 0.002 µg/L

## Marine

There were no toxicity data for marine species. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.002 µg/L

# Aroclor 1016 [CAS No. 12674-11-2]

## Freshwater

### Fails HR and MR

After screening there were only acute toxicity data for 14 species which belonged to two different taxonomic groups (fish & amphibia).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1.08 µg/L ÷ 1000
= 0.00108 µg/L

Which was rounded off to 0.001 µg/L

LR (ECL) TV = 0.001 µg/L

## Marine

After screening there were acute toxicity data for 3 species which belonged to 2 different taxonomic groups (crustacea & molluscs).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 9.1 µg/L ÷ 1000
= 0.009 µg/L

# Aroclor 1221 [CAS No. 11104-28-2]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 1 taxonomic group (fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1050 µg/L ÷ 1000
= 1.05 µg/L

This was rounded off to 1 µg/L

LR (ECL) TV = 1 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) was adopted for marine waters.

LR (ECL) TV = 1 µg/L

# Aroclor 1232 [CAS No. 11141-16-5]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 1 taxonomic group (fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 320 µg/L ÷ 1000
= 0.32 µg/L

This was rounded off to 0.3 µg/L

LR (ECL) TV = 0.3 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.3 µg/L

# Aroclor 1242 [CAS No. 53469-21-9]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 5414.98 | 15 | 471.17 | 10 | 27.02 | 400 |
| 11.66 | 39.81 | 4.08 | | | |

HC1 50% = 1.833
HC5 50% = 3.662
HC10 50% = 5.593
HC20 50% = 9.955

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 5.87.

MR TV (HC1 50%) = 1.833 ÷ 5.870 = 0.312 = 0.3 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because aroclor-1242 can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.312265758 | 0.623850085 | 0.952810903 | 1.695911414 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.3 | 0.6 | 1.0 | 1.7 µg/L |

## Marine

### Fails HR and MR

There were no chronic toxicity data and only acute data for 1 species — a crustacean. Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 13 µg/L ÷ 1000
= 0.013 µg/L

However, the freshwater TV was of higher quality than the marine TV and was therefore adopted for marine waters.

LR TV (HC1 50%) = 0.3 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because aroclor-1242 can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.312265758 | 0.623850085 | 0.952810903 | 1.695911414 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.3 | 0.6 | 1.0 | 1.7 µg/L |

# Aroclor 1248 [CAS No. 12672-29-6]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 5 species, which belonged to 2 different taxonomic groups (fish and crustaceans).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 29 µg/L ÷ 1000
= 0.029 µg/L

This was rounded up to 0.03 µg/L

LR (ECL) TV = 0.03 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.03 µg/L

# Aroclor 1254 [CAS No. 11097-69-1]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1.18 | 145.33 | 2740 | 0.53 | 37110.07 | 0.32 | 7.70 | 1262.93 | 9 |
| 2400 | 2400 | 100 | 200 | 4.57 | 11.95 | 1.90 | | |

HC1 50% = 0.11
HC5 50% = 0.39
HC10 50% = 0.85
HC20 50% = 2.43

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV is derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (fish) was 11.38.

MR TV (HC1 50%) = 0.11 ÷ 11.38 = 0.0097 = 0.01 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because aroclor-1242 can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0097 | 0.034 | 0.075 | 0.214 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.03 | 0.07 | 0.2 µg/L |

## Marine
### Fails HR and MR

There were only acute toxicity data for 3 species that belonged to one taxonomic group — fish. Therefore, the data only meet the minimum data requirements of a LR (ECL) TV. However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

MR TV (HC1 50%) = 0.11 ÷ 11.38 = 0.0097 = 0.01 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because aroclor-1242 can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0097 | 0.034 | 0.075 | 0.214 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.03 | 0.07 | 0.2 µg/L |

# Aroclor 1260 [CAS No. 11096-82-5]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 1 species (a fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 25000 µg/L ÷ 1000
= 25 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater ECL was adopted for marine waters.

LR (ECL) TV = 25 µg/L

# Aroclor 1262 [CAS No. 37324-23-5]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species (a fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 50000 µg/L ÷ 1000
= 50 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 50 µg/L

# Aroclor 1268 [CAS No. 11100-14-4]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species (a fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 50000 µg/L ÷ 1000
= 50 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 50 µg/L

# 2,3,4'-trichlorobiphenyl [CAS No. 38444-85-8]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species (a crustacean).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 70 µg/L ÷ 1000
= 0.07 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.07 µg/L

# 4,4'-dichlorobiphenyl [CAS No. 2050-68-2]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species (a crustacean).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 100 µg/L ÷ 1000
= 0.1 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.1 µg/L

# 2,2',4,5,5'-pentachloro-1,1'-biphenyl [CAS No. 37680-73-2]

## Freshwater

### Fails HR and MR

After screening there were only acute toxicity data for one species (crustacea).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 210 µg/L ÷ 1000
= 0.21 µg/L

Which was rounded off to 0.02 µg/L

LR (ECL) TV = 0.2 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.2 µg/L

# 2,4,6,2',4',6'-hexachlorobiphenyl [CAS No. 33979-03-2]

## Freshwater

### Fails HR and MR

After screening there were only acute toxicity data for one species (a crustacean).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 150 µg/L ÷ 1000
= 0.15 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.15 µg/L

# Phenol [CAS No. 108-95-2]

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 6734.98 | 9499.47 | 14094.33 | 15499.68 | 27970.57 | 46752.47 |
| 10600 | 46000 | 1555 | 31500 | 23595.69 | 6984.64 |
| 30499.84 | 8000 | 32196.58 | 33408.61 | 16700 | 36300 |
| 32465.37 | 18435.23 | 16000 | 23520.69 | 10860.49 | 8410.73 |
| 42252.22 | 34751.20 | 9000 | 37229.02 | 40029.17 | 7093.66 |
| 21794.49 | 64652.92 | 103963.09 | 50000 | 36000 | 126000 |
| 8800 | 32000 | 7337.58 | 42000 | 20000 | 114000 |
| 132000 | 106338.63 | 7000 | 16553.55 | 11714.25 | 56483.71 |
| 39700 | 130000 | 22912.88 | 37400 | 63029.84 | 55645.51 |
| 18000 | 21000 | 57000 | 6000 | 37000 | 16000 |
| 50000 | 30000 | 190000 | 190000 | 16933.69 | 2000 |
| 670820.39 | 240000 | 944911.28 | 346410.16 | 161961.09 | 80500 |
| 33602.96 | 28000 | 50000 | 287749.89 | 69800 | 2000000 |
| 16000 | 200000 | 1000000 | 440000 | 860000 | |
| 432666.15 | 1084634.89 | 214476.11 | 500000 | 2000 | 30000 |
| 2000 | 7000 | 50000 | 7000 | 450000 | 100000 |
| 400000 | 2000 | 24000 | 1074342.85 | 280000 | |
| 173129.25 | 22000 | 30000 | 70888.67 | 854634.42 | 50000 |
| 1000000 | 580000 | 564621.62 | 320000 | 100000 | |
| 157590.97 | 160790.56 | 265000 | 125701.75 | 350000 | |
| 368385.17 | 288444.1 | 260000 | 107000 | 94000 | 520000 |
| 370000 | 920516.41 | 1000000 | 1000000 | 95394.71 | 420000 |
| 357559.07 | 120000 | 460000 | 1080000 | 480000 | 1280000 |
| 290000 | 823771.81 | 35600 | 120000 | 750999.33 | 340000 |
| 59000 | 230867.93 | 100000 | 66675.64 | 150000 | 64000 |
| 148098.49 | 370000 | 102000 | 72876.27 | | |

HC1 50% = 1386
HC5 50% = 5269
HC10 50% = 9843
HC20 50% = 19844

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There ACR for all species was 16.278.

MR TV = 5269 ÷ 16.278 = 323.688 = 325 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 85.15603883 | 323.7013 | 604.6904 | 1219.047 |

These were rounded off to

| | | | |
|---|---|---|---|
| 85 | 320 | 600 | 1200 µg/L |

## Marine
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 10000 | 10000 | 11000 | 16040.57 | 5200 | 9500 | 20459.49 |
| 14230 | 41632.47 | 56000 | 56000 | 21729.47 | 128048.43 | 181439.14 |
| 10846.35 | 175000 | 52800 | 122250.85 | 222620.44 | 49878 | 13000 |

| | | |
|---|---|---|
| HC1 50% | = | 4394 |
| HC5 50% | = | 6571 |
| HC10 50% | = | 8405 |
| HC20 50% | = | 11752 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There ACR for all species was 16.278.

MR TV = 4375 ÷ 16.278 = 268.77 = 270 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 269.954 | 403.666 | 516.367 | 721.931 |

These were rounded off to

| | | | |
|---|---|---|---|
| 270 | 400 | 520 | 720 µg/L |

# 2,4-dimethylphenol [CAS No. 105-67-9]
## Freshwater
### Fails Hr and MR

There were only acute toxicity data for 4 species which belonged to 3 taxonomic groups (a fish, crustecea and protozoa).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2100 µg/L ÷ 1000
= 2.1
≈ 2 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 2 µg/L

# Nonyl phenols

## Freshwater

### Fails HR and MR

There were only chronic toxicity data for 1 species, a crustacean. There were only acute toxicity data for 3 species which belonged to 2 taxonomic groups (fish and crustacea).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 200
= 24 µg/L ÷ 200
= 0.12
≈ 0.1 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

There were only toxicity data for 1 species, a crustacean.

Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1230 µg/L ÷ 1000
= 1.23 µg/L

This was rounded off to 1 µg/L

LR (ECL) TV = 1 µg/L

# 2-monochlorophenol [CAS No. 95-57-8]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 10700 | 20472.73 | 8674.24 | 13458.27 | 5235.81 |
| 6900 | 170000 | 50000 | 70000 | 67970 |

HC1 50% = 3351
HC5 50% = 4944
HC10 50% = 6273
HC20 50% = 8673

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV (HC1 50%) = 3351 ÷ 10 = 335.1 ≈ 340 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the HC5 50% failed to protect *D. magna* from chronic toxicity.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 335.1 | 494.4 | 627.3 | 867.3 |

These were rounded off to

| | | | |
|---|---|---|---|
| 340 | 490 | 630 | 870 µg/L |

## Marine
### Fails HR and MR

There were only acute toxicity data for 2 marine species which both belonged to 1 taxonomic group — fish. Therefore, the data meets the minimum data requirements of a LR (ECL) TV.

LR (ECL) TV = lowest value ÷ 1000
= 6290 ÷ 1000
= 6.3µg/L

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

MR TV (HC1 50%) = 3351 ÷ 10 = 335.1 ≈ 340 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because 2-chlorophenol can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 335.1 | 494.4 | 627.3 | 867.3 |

These were rounded off to

| | | | |
|---|---|---|---|
| 340 | 490 | 630 | 870 µg/L |

# 3-monochlorophenol [CAS No. 108-43-0]
## Freshwater
### Fails Hr and MR

There were only acute toxicity data for 2 species, a fish and a green alga.

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 4,500 µg/L ÷ 1000
= 4.5 µg/L

## Marine

There were only acute toxicity data for 1 species, a fish.

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 3990 µg/L ÷ 1000
= 3.99 µg/L

This was rounded up to 4 µg/L

LR (ECL) TV = 4 µg/L

# 4-monochlorophenol [CAS No. 106-48-9]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 4900 | 7836.75 | 3800 | 1910 | 4642.09 | 9000 |
| 3471.31 | 12856 | 29000 | 9005.76 | 36680 | |

HC1 50% = 1569
HC5 50% = 2245
HC10 50% = 2764
HC20 50% = 3631

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 5.74. The HC5 50% figure did not provide adequate protection from chronic toxicity to fish and invertebrates. As the first approach is to use the default ACR (given that there is a degree of uncertainty about ACRs). The resultant HC5 50% figure provided adequate protection from chronic toxicity.

MR TV = 2245 ÷ 10 = 224.5 = 220 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 156.9 | 224.5 | 276.4 | 363.1 |

These were rounded off to

160 220 280 360 µg/L

## Marine

### Fails HR and MR

There were chronic toxicity data for only 2 species, which belonged to 2 taxonomic groups (green alga and diatom). There were acute toxicity data for 2 species that belonged to 1 taxonomic group (fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1286 µg/L ÷ 1000
= 1.3 µg/L

However, the freshwater TV was of higher quality than this and should therefore be adopted for marine waters.

LR TV = 2245 ÷ 10 = 224.5 = 220 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 156.9 | 224.5 | 276.4 | 363.1 |

These were rounded off to

| | | | |
|---|---|---|---|
| 160 | 220 | 280 | 360 µg/L |

# 2,3-dichlorophenol [CAS No. 576-24-9]

## Freshwater

### Fails HR and MR

There were only chronic toxicity data for 1 species, an alga. There were only acute toxicity data for 2 species that belonged to 2 taxonomic groups (fish and crustacea).

∴ Only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 3100 µg/L ÷ 100
= 31 µg/L

## Marine

### Fails HR and MR

There were no chronic toxicity data and only acute data for 1 species, a fish.

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 4380 µg/L ÷ 1000
= 4.4 µg/L

However, the freshwater TV was of higher quality than this and should therefore be adopted for marine waters.

LR TV = 31 µg/L

# 2,4-dichlorophenol [CAS No. 120-83-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 6300 | 2000 | 2600 | 8079.75 | 1911.54 | 2500 |
| 9200 | 11500 | 38644.88 | 15000 | | |

HC1 50% = 1172

HC5 50% = 1644
HC10 50% = 2022
HC20 50% = 2680

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV (HC1 50%) = 1172 ÷ 10 = 117.2 = 120 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the TV did not provide adequate protection for some of the species from chronic toxicity.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 117.2 | 164.4 | 202.2 | 268 |

These were rounded off to

120 160 200 270 µg/L

# Marine

## Fails HR and MR

There were chronic toxicity data for 1 species that belonged to 1 taxonomic group (diatom). There were only acute toxicity data for 2 species that belonged to 1 taxonomic group (fish).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 815 µg/L ÷ 1000
= 0.815 µg/L

However, the freshwater TV was of higher quality than this and should therefore be adopted for marine waters.

LR TV (HC1 50%) = 120 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the TV did not provide adequate protection to some of the chronic toxicity data.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 117.2 | 164.4 | 202.2 | 268 |

These were rounded off to

120 160 200 270 µg/L

# 2,5-dichlorophenol [CAS No. 583-78-8]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species which belonged to two taxonomic groups (fish & protozoa).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 3300 µg/L ÷ 1000
= 3.3 µg/L
≈ 3 µg/L

## Marine

### Fails HR and MR

There were acute toxicity data for 1 species, a fish.

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 3290 µg/L ÷ 1000
= 3.29 µg/L
≈ 3 µg/L

# 2,6-dichlorphenol [CAS No. 87-65-0]

## Freshwater

### Fails HR and MR

There were chronic toxicity data for 2 species that belonged to 1 taxonomic group (green alga). There were only acute toxicity data for 2 species that belonged to 2 taxonomic groups (fish and crustacea). By combining the data there were values for 4 species that belonged to 3 taxonomic groups (fish, crustacea and green alga).

∴ Only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 3400 µg/L ÷ 100
= 34 µg/L

## Marine

### Fails Hr and MR

There were acute toxicity data for 1 species, a fish.

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 5400 µg/L ÷ 1000
= 5.4 µg/L
≈ 5 µg/L

However, the freshwater TV was of higher quality than this and should therefore be adopted for marine waters.

LR TV = 34 µg/L

# 3,4-dichlorophenol [CAS No. 95-77-2]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, a fish and a green alga
∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1900 µg/L ÷ 1000
= 1.9 µg/L
≈ 2 µg/L

## Marine

There were acute toxicity data for only 1 species, a fish

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2300 µg/L ÷ 1000
= 2.3 µg/L
≈ 2 µg/L

# 3,5-dichlorophenol [CAS No. 591-35-5]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 1 species that belonged to 1 taxonomic group — a fish. There were chronic toxicity data for 2 species that belonged to 1 taxonomic group — green alga. By combining the data there were toxicity data for 3 species which belonged to 2 different taxonomic groups (fish and green alga).

∴ Only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 2000
= 890 µg/L ÷ 200
= 4.5 µg/L

Which was rounded down to 4 µg/L

LR (ECL) TV = 4 µg/L .

## Marine

### Fails HR and MR

There were only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 3500 µg/L ÷ 1000 |
| | = | 3.5 |
| | ≈ | 4 µg/L |

# 2,3,4-trichlorophenol [CAS No. 15950-66-0]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species, a fish and there were only chronic toxicity data for 1 species — a green alga.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 1100 µg/L ÷ 1000 |
| | = | 1.1 |
| | ≈ | 1 µg/L |

## Marine

There were acute toxicity data for only 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 4310 µg/L ÷ 1000 |
| | = | 4.3 |
| | | 4 µg/L |

# 2,3,5-trichlorophenol [CAS No. 933-78-8]

## Freshwater

### Fails HR and MR

There were no toxicity data for freshwater species. Therefore the marine LR (ECL) TV was adopted for freshwater.

| | | |
|---|---|---|
| LR (ECL) TV | = | 2 µg/L |

## Marine

There were only acute toxicity data for 1 species, a fish

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 2310 µg/L ÷ 1000 |
| | = | 2.3 |
| ≈ | 2 µg/L | |

# 2,3,6-trichlorophenol [CAS No. 933-75-5]

## Freshwater

### Fails HR and MR

There were no toxicity data for freshwater species. Therefore the marine LR (ECL) TV was adopted for freshwater.

LR (ECL) TV = 2 µg/L

## Marine

There were only acute toxicity data for 2 species, both of which were fish

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2130 µg/L ÷ 1000
= 2.1 µg/L
≈ 2 µg/L

# 2,4,5-trichlorophenol [CAS No. 95-95-4]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 5 species from 2 taxonomic groups, 4 fish and a crustacean. Only one chronic data point was available (361 µg/L NOEC growth for *P. promelas*) but this was not used.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 450 µg/L ÷ 1000
= 0.45 µg/L
This was rounded off to 0.5 µg/L

## Marine

There were acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 4010 µg/L ÷ 1000
= 4 µg/L

# 2,4,6-trichlorophenol [CAS No. 88-06-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 643.43 | 2220.13 | 1768.94 | 362.22 | 646.75 | 5466.14 |
| 779.33 | 5500 | 10000 | 5600 | 3500 | 1200 |
| 3990 | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 26.29 |
| HC5 50% | = | 179.78 |
| HC10 50% | = | 411.46 |
| HC20 50% | = | 941.7 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR There was no ACR.

MR TV (HC1 50%) = 26.29 ÷ 10 = 2.269 ≈ 3 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because 2,4,6-trichlorophenol can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2.629 | 17.98 | 41.15 | 94.17 |

These were rounded off to

| | | | |
|---|---|---|---|
| 3 | 20 | 40 | 95 µg/L |

# Marine

## Fails HR and MR

There were acute toxicity data for 3 species that belonged to 2 taxonomic groups (fish and crustacea) and there was chronic toxicity data for 1 species — a diatom.

Therefore a LR (interim) TV could be derived.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ 100 |
| | = | 1400 ÷ 100 |
| | = | 14 µg/L |

However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV (HC1 50%) = 3 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because 2,4,6-trichlorophenol can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 2.629 | 17.98 | 41.15 | 94.17 |

These were rounded off to

| | | | |
|---|---|---|---|
| 3 | 20 | 40 | 95 µg/L |

# 2,3,4,5-tetrachlorophenol [CAS No. 4901-51-3]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 2 species, both of which were fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 205 µg/L ÷ 1000
= 0.2 µg/L

## Marine

There were acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1500 µg/L ÷ 1000
= 1.5 µg/L

This was rounded off to 2 µg/L

# 2, 3, 4, 6-tetrachlorophenol [CAS No. 58-90-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 834.51 | 140 | 620 | 1030 | 750 | 334.96 |
| 295.40 | 300 | 690 | 650 | 10100 | 1300 |

HC1 50% = 112.6
HC5 50% = 177.0
HC10 50% = 226.4
HC20 50% = 308.8

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 2.05.

MR TV (HC1 50%) = 112.6 ÷ 2.05 = 54.927 = 55 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 54.92682927 | 86.34146341 | 110.4390244 | 150.6341463 |

However, this TV did not provide sufficient protection. Therefore, a default AF of 10 was used rather than the ACR.

MR TV (HC1 50%) = 112.6 ÷ 10 = 11.26 = 11 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 11.26 | 17.7 | 22.64 | 30.88 |

These were rounded off to

| | | | |
|---|---|---|---|
| 10 | 20 | 25 | 30 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 3 species which belonged to 3 taxonomic groups (fish, crustacea and mollusca).

Therefore a LR (ECL) TV could be derived.

LR (interim) TV = lowest value ÷ 1000
= 1100 ÷ 1000
= 1.1 µg/L

However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV (HC1 50%) = 11 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because 2,3,4,6-terachlorophenol can bioaccumulate.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 11.26 | 17.7 | 22.64 | 30.88 |

These were rounded off to

| | | | |
|---|---|---|---|
| 10 | 20 | 25 | 30 µg/L |

# 2,3,5,6-tetrachlorophenol [CAS No. 935-95-5]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 2 species, 1 fish, 1 crustacean while there were chronic toxicity data for 1 species, a protozoan.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) = lowest value ÷ 1000
= 170 µg/L ÷ 1000
= 0.17 µg/L
≈ 0.2 µg/L

## Marine

There were only acute toxicity data for 3 species, 2 fish and a crustacean.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 1390 ÷ 1000 |
| | = | 1.390 |
| | ≈ | 1.4 µg/L |

# Pentachlorophenol [CAS No. 87-86-5]

## Freshwater

## HR Calculations

The data used to derive a HR TV were:

| | | | | | |
|---|---|---|---|---|---|
| 41 | 271 | 44.9 | 100 | 250 | 50 |
| 50 | 94.87 | 144.19 | 20 | 89.44 | |

| | | |
|---|---|---|
| HC1 50% | = | 14.56 |
| HC5 50% | = | 24.07 |
| HC10 50% | = | 30.94 |
| HC20 50% | = | 41.67 |

HR TV (HC1 50%) = 14.56 = 15 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because pentachlorophenol can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 14.56 | 24.07 | 30.94 | 41.67 |

However, the above TV was not used as it did not provide adequate protection for even acute toxicity data. Therefore, the MR TV was calculated, given that there was a much larger acute data set.

## MR Calculation

The aqueous solubility of pentachlorophenol is 14mg/L. Therefore the maximum concentration for toxicity data to be included in the calculation of the TV is 28 000 µg/L.

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 71.75 | 513.81 | 511.40 | 145.54 | 87 | 85 |
| 482.49 | 39.47 | 45 | 393.32 | 331.31 | 68.59 |
| 211.18 | 449.12 | 84.36 | 38 | 603.76 | 202.37 |
| 93.38 | 284.55 | 45.91 | 247.89 | 797.76 | 217.30 |
| 103.54 | 54 | 761.58 | 70 | 202.74 | 253.55 |
| 812.16 | 440 | 1500 | 410.24 | 649.73 | 701.43 |
| 317.49 | 391.85 | 700 | 520 | 220 | 68 |
| 220.14 | 170 | 1521.18 | 110 | 250.55 | 380 |
| 1260 | 1210 | 149.31 | 258.07 | 144.57 | 492.95 |
| 547.72 | 192.65 | 172.07 | 387.64 | 562.10 | 1111.06 |
| 730 | 130 | 489.9 | 300.33 | 90 | 80 |
| 183 | 310 | 300 | 100 | 208.49 | 260 |
| 400 | 3200 | 3265.15 | 9822.56 | 7200 | 5900 |

| | | | | |
|---|---|---|---|---|
| 11000 | 7000 | | 10 300 | 21865.86 |
| HC1 50% | = | 16.40 | | |
| HC5 50% | = | 47.18 | | |
| HC10 50% | = | 75.09 | | |
| HC20 50% | = | 122.2 | | |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 4.54.

MR TV (HC1 50%) = 16.40 ÷ 4.54 = 3.61 = 3.6 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because pentachlorophenol can bioaccumulate and the HC5 50% did not provide an adequate margin of safety for fish acute toxicity.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.612 | 10.392 | 16.540 | 26.916 |

These were rounded off to

| | | | |
|---|---|---|---|
| 3.6 | 10 | 17 | 27 µg/L |

# Marine

## Fails HR

## MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 272.03 | 450 | 728.90 | 172.51 | 1495.71 | 450 |
| 4804.98 | 82 | 10000 | 3300 | 371 | 541.74 |
| 141.53 | 7500 | 6145.20 | 184.39 | 1200 | 344 |
| 163 | 482 | 18000 | 642.52 | 67 | 1039.28 |
| 2100 | 785.94 | 5500 | 3600 | 3000 | |

| | | |
|---|---|---|
| HC1 50% | = | 51.24 |
| HC5 50% | = | 101.16 |
| HC10 50% | = | 148.90 |
| HC20 50% | = | 245.9 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV is derived using acute toxicity data it is a MRTV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 4.54.

MR TV (HC1 50%) = 51.24 ÷ 4.54 = 11.286 = 11.3 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 11.28634361 | 22.28193833 | 32.79735683 | 54.16299559 |

These were rounded off to

| | | | |
|---|---|---|---|
| 11 | 22 | 33 | 55 µg/L |

# 2-nitrophenol [CAS No. 88-75-5]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 3 species which belonged to 2 taxonomic groups: fish and crustacea.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 1600 µg/L ÷ 1000 |
| | = | 1.6 µg/L |
| | ≈ | 2 µg/L |

## Marine

There were only acute toxicity data for 2 species which belonged to 2 taxonomic groups — fish and crustacea.

Therefore only a LR (interim) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 2100 µg/L ÷ 1000 |
| | = | 2.1 µg/L |
| | | 2 µg/L |

# 3-nitrophenol [CAS No. 554-84-7]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 1 species, a fish.

Therefore only a LR (interim) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 1300 µg/L ÷ 1000 |
| | = | 1.3 µg/L |
| | ≈ | 1 µg/L |

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 1 µg/L

# 4-nitrophenol [CAS No. 100-02-7]

## Freshwater

### Fails HR and MR

There were chronic toxicity data for 3 species that belong to 3 taxonomic groups (fish, crustacea and green alga). There were acute toxicity data for 13 species that belong to 3 taxonomic groups (fish, crustacea and green algae).

Therefore a LR (interim) TV can be derived.

LR (interim) TV = lowest value ÷20
= 1160 ÷20
= 58 µg/L

## Marine
### Fails HR and MR

There were only chronic toxicity data for 1 species — a fish. There were only acute toxicity data for 5 species that belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.
LR (ECL) TV = lowest value ÷1000
= 2700 ÷1000
= 2.7 µg/L

However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 58 µg/L

# 2,4-dinitrophenol [CAS No. 51-28-5]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 23000 | 550 | 6867.36 | 520 | 5065.98 | 1568.88 | 1165.59 |
| 2019.12 | 11432.49 | 4394.43 | 3806.99 | 6490 | 26000 | |

HC1 50% = 131.7
HC5 50% = 447.4
HC10 50% = 776.0
HC20 50% = 1406

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 447.7 ÷ 10 = 44.74 = 45 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 13.17 | 44.743 | 77.602 | 140.563 |

These were rounded off to

13 45 80 140 µg/L

## Marine
### Fails HR and MR

There were chronic toxicity data for only 1 species, a fish. There were acute toxicity data for 5 species that belong to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷1000 |
| | = | 200 ÷1000 |
| | = | 0.2 µg/L |

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

MR TV = 447.7 ÷ 10 = 44.74 = 45 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 13.17 | 44.743 | 77.602 | 140.563 |

These were rounded off to

| | | | |
|---|---|---|---|
| 13 | 45 | 80 | 140 µg/L |

# 2,4,6-trinitrophenol [CAS No. 88-89-1]

## Freshwater

### Fails HR and MR

There were chronic toxicity data for 3 species that belonged to 2 taxonomic groups (crustacea and green alga). There were acute toxicity data for 5 species that belonged to 3 taxonomic groups (fish, crustacea and green alga).

Therefore only a LR (interim) TV could be derived. An Assessment factor of 20 was used as the lowest datum point was chronic.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷20 |
| | = | 5000 ÷20 |
| | = | 250 µg/L |

## Marine

### Fails HR and MR

There were only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (fish and mollusca).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷1000 |
| | = | 57050 ÷1000 |
| | = | 57 µg/L |

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

LR TV = 250 µg/L

# Carbon disulfide [CAS: 75-15-0]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 3 species, 1 fish, 1 crustacean and 1 alga.

Therefore only a LR (Interim) TV could be derived.

LR (Interim) TV = lowest value ÷ 100
= 2 100 µg/L ÷ 100
= 21 µg/L
≈ 20 µg/L

## Marine

There were toxicity data for only 1 marine species. Therefore only a LR (ECL) TV could be derived (would give a value of 65 (65000/1000)). However, the freshwater LR (interim) TV was of higher quality and was therefore adopted as the LR TV for marine waters.

Therefore LR TV = 20 µg/L

# N-propylsufide [CAS: 111-47-7]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species — a fish

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 21700 µg/L ÷ 1000
= 21.7 µg/L

Which was rounded down to 20 µg/L

LR (ECL) TV = 20 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 20 µg/L

# Propyl disulfide [CAS: 629-19-6]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000

= 2620 µg/L ÷ 1000
= 2.62 µg/L
= 2.6 µg/L
≈ 3 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 3 µg/L

# Isopropyl disulfide [CAS: 4253-89-8]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 8310 µg/L ÷ 1000
= 8.31 µg/L

This was rounded off to 8 µg/L.

LR (ECL) TV = 8 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 8 µg/L

# tert-butyl sulfide [CAS: 107-47-1]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 29,100 µg/L ÷ 1000
= 29.1 µg/L
= 29 µg/L
≈ 30 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 30 µg/L

# Phenyldisufide [CAS 882-33-7]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species, a fish

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 110 µg/L ÷ 1000
= 0.11 µg/L

Which was rounded up to 0.1 µg/L

LR (ECL) TV = 0.1 µg/L

## Marine

There ware no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.
LR (ECL) TV = 0.1 µg/L

# Bis(dimethylthiocarbamyl)sulfide [CAS: 97-74-5]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute data for 3 species, which belonged to 3 taxonomic groups (fish, crustacea and green alga).

Therefore only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 1000 µg/L ÷ 100
= 10 µg/L

## Marine

### Fails HR and MR

There were no toxicity data for marine organisms. Therefore the freshwater LR (interim) TV was adopted for marine waters.

LR TV = 10 µg/L

# Bis(diethylthiocarbamyl)disulfide [CAS: 97-77-8]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute data for 3 species, which belonged to 3 taxonomic groups (fish, crustacea and green alga, i.e. OECD MPD). The data used to derive the TV for this chemical are not in the database. Therefore, the data from the database should not be used to derive any site-specific TVs or to recalculate TVs as more data becomes available. The data used to derive the TV were obtained from AQUIRE but may not have been sufficiently screened. Hence, only a low reliability TV could be calculated, as an interim indicative working level.
Therefore only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 120 µg/L ÷ 100
= 1 µg/L

## Marine
### Fails HR and MR

There were no toxicity data for marine organisms. Therefore the freshwater LR (interim) TV was adopted for marine waters.

LR TV = 1 µg/L

# 2-methoxy-4H-1,3,2-benzodioxaphosphorium-2-sulfide [CAS: 3811-49-2]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 5 species, which belonged to 2 taxonomic groups (fish and mollusca).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2000 µg/L ÷ 1000
= 2 µg/L

## Marine
There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 2 µg/L

# Potassium amyl xanthate
## Freshwater
### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium ethyl xanthate was 500 µg/L.

There were no chronic data and only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 500 µg/L ÷ 1000
= 0.5 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater ECL was adopted for marine waters.

LR (ECL) TV = 0.5 µg/L

# Potassium ethyl xanthate [CAS No. 140-89-6]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium ethyl xanthate was 50 µg/L.

There were no chronic data and only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 50 µg/L ÷ 1000
= 0.05 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater ECL was adopted for marine waters.

LR (ECL) TV = 0.05 µg/L

# Potassium hexyl xanthate [CAS No. 2720-76-5]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium ethyl xanthate was 450 000 µg/L.

There were no chronic data and only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 450 000 ÷ 1000
= 450 µg/L
≈ 500 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater ECL was adopted for marine waters.

LR (ECL) TV = 500 µg/L

# Potassium isopropyl xanthate [CAS No. 140-92-1]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium ethyl xanthate was 14 000 µg/L.

There were no chronic data and only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 14 000 ÷ 1000
= 14 µg/L
≈ 15 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater ECL was adopted for marine waters.

LR (ECL) TV = 15 µg/L

# Sodium ethyl xanthate [CAS No. 140-90-9]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium ethyl xanthate was 50 µg/L.

There were no chronic data and only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 50 µg/L ÷ 1000
= 0.05 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater ECL was adopted for marine waters.

LR (ECL) TV = 0.05 µg/L

# Sodium iso-butyl xanthate [CAS No. 2530-75-6]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium sec-butyl xanthate was 4700 µg/L.

There were no chronic toxicity data and only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 4700 µg/L ÷ 1000
= 4.7
≈ 5 µg/L

## Marine

### Fails HR and MR

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 5 µg/L

# Sodium isopropylxanthate [CAS No. 140-93-2]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium isopropyl xanthate was 50 µg/L.

There were no chronic toxicity data and only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 50 µg/L ÷ 1000
= 0.05 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.05 µg/L

# Sodium sec-butyl xanthate [CAS No. 36551-21-0]

## Freshwater

### Fails HR and MR

A compilation of toxicity data by Hawley (1977) came very late during the derivation process and it was not possible to obtain the original references before the guidelines were completed. Some of the values reported by Hawley (1977) were much lower than the screened figures that are in the database. For this reason it was considered appropriate to base the ECL figures on median values of the lowest unpublished ranges reported by Hawley (1977). The median of the values from Hawley (1977) for sodium sec-butyl xanthate was 4700 µg/L.

There were no chronic toxicity data and only acute toxicity data for 2 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 4700 µg/L ÷ 1000
= 4.7
≈ 5 µg/L

## Marine

### Fails HR and MR

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 5 µg/L

# Dimethylphthalate [CAS No. 131-11-3]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

50000 56000 68694.98 45900 377000 142000

HC1 50% = 30417
HC5 50% = 37461
HC10 50% = 42554
HC20 50% = 50616

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and was divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 37461 ÷ 10 = 3746.1 = 3750 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3041.7 | 3746.1 | 4255.4 | 5061.6 |

These were rounded off to

3000 3700 4300 5100 µg/L

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 2 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 29 000 µg/L ÷ 1000
= 29 µg/L

However, the freshwater TV was of higher quality and was therefore adopted for marine waters.

LR TV = 3750 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3041.7 | 3746.1 | 4255.4 | 5061.6 |

These were rounded off to

3000 3700 4300 5100 µg/L

# Diethylphthalate [CAS No. 84-66-2]
## Freshwater
### Fails HR
### MR Calculations

16700 12000 16899.70 86000 13100 16000

HC1 50% = 8984
HC5 50% = 10440
HC10 50% = 11445
HC20 50% = 12970

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 10440 ÷ 10 = 1044 = 1050 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 898.4 | 1044 | 1144.5 | 1297 |

These were rounded off to

| | | | |
|---|---|---|---|
| 900 | 1000 | 1100 | 1300 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 2 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2900 µg/L ÷ 1000
= 2.9 µg/L

However, the freshwater TV was of higher quality and therefore was adopted for marine waters.

LR TV = 1050 µg/L

However, this TV did not provide adequate protection to the most sensitive acute toxicity data. Therefore, the HC1 50% TV was adopted.

LR TV = 900 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 898.4 | 1044 | 1144.5 | 1297 |

These were rounded off to

| | | | |
|---|---|---|---|
| 900 | 1000 | 1100 | 1300 µg/L |

# Dibutylphthalate [CAS No. 84-74-2]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 480 | 1600 | 1190.29 | 2940 | 6290 | 400 |

Because toxicity data were limited to less than eight species, the Burr Type III distribution was applied with caution (as per the directions in the BurrliOZ software section of the 'TOX-Read Me' File on the CD-ROM and Internet site). The fit of the log-logistic and the selected Burr Type III distributions to

the data were compared. This showed that the log-logistic distribution fitted the data better than the selected Burr Type III distribution. Therefore, the Trigger Value and other levels of protection were calculated using the log-logistic distribution.

HC1 50% = 91.97
HC5 50% = 241.54
HC10 50% = 373.46
HC20 50% = 600.13

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for crustaceans was 9.29.

MR TV (HC1 50%) = 91.97 ÷ 9.29 = 9.89 = 10 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because dibutylphthalate can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 9.89 | 26.0 | 40.2 | 64.59 |

These were rounded off to

| | | | |
|---|---|---|---|
| 10 | 26 | 40 | 65 µg/L |

# Marine
## Fails HR and MR

There were no chronic toxicity data and only acute data for 1 species, which was a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 500 µg/L ÷ 1000
= 0.5 µg/L

However, the freshwater TV was of higher quality and was therefore adopted for marine waters.

LR TV (HC1 50%) = 26 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 26.16361679 | 37.3196986 | 46.39397201 | 62.36813778 |

These were rounded off to

| | | | |
|---|---|---|---|
| 25 | 35 | 45 | 60 µg/L |

# Bis(2-ethylhexyl)phthalate [CAS No. 117-81-7]
# Freshwater
## Fails Hr and MR

There were chronic toxicity data for 1 species, a fish. There were only acute toxicity data for 3 species, 1 fish, 1 crustacean and 1 green alga. Quite some number of the toxicity data exceeded twice reliable literature values for the aqueous solubility of this chemical. The highest concentration toxicity datum used to derive the TV was 610.

Therefore only a LR (Interim) TV could be derived.

LR (Interim) TV = lowest value ÷ 100
= 133 µg/L ÷ 100
= 1.3 µg/L
≈ 1 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (interim) TV was adopted for marine waters.

Therefore LR TV = 1 µg/L

# Acetonitrile [CAS No. 75-05-8]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 1 species.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest acute value ÷ 1000
= 160 000 µg/L ÷ 1000
= 160 µg/L

## Marine

There were no marine toxicity data for this chemical. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 160 µg/L

# Acrylonitrile [CAS No. 107-13-1]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data. There were only acute toxicity data for 9 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 7600 µg/L ÷ 1000
= 7.6 µg/L

Which was rounded up to 8 µg/L

LR (ECL) TV = 8 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 8 µg/L

# Poly(acrylonitrile-co-butadiene-co-styrene) [CAS No. 9003-56-9]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 13900 | 14215.10 | 19364.92 | 19500 | 19933.11 |
| 34484.25 | 7600 | 32000 | 12804.75 | 34000 |
| 29786.39 | 8717.80 | 34200 | 7883.74 | |

HC1 50% = 2026.74
HC5 50% = 5259.74
HC10 50% = 7931.14
HC20 50% = 11961.35

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (crustaceans) was 10.

MR TV = 5259.74 ÷ 10 = 525.97 = 525 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 202.674 | 525.97 | 793.114 | 1196.135 |

These were rounded off to

200 530 800 1200 µg/L

## Marine

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 2900 | 3349.63 | 3546.83 | 6855.65 | 13057.56 | 20000 |
| 3098.39 | 6993.57 | 11618.95 | 14124.45 | 3200 | 3400 |

HC1 50% = 1963.62
HC5 50% = 2461.12
HC10 50% = 2825.88
HC20 50% = 3410.69

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (crustaceans) was 10.

MR TV = 2461.12 ÷ 10 = 246.1 = 245 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 196.362 | 246.112 | 282.588 | 341.069 |

These were rounded off to

200 250 280 340 µg/L

# Dimethylformamide [CAS No. 68-12-2]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 9 species belonging to 3 different taxonomic groups (fish, crustacea and insects).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1000000 µg/L ÷ 1000
= 1000 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 1000 µg/L

# 1,2-diphenylhydrazine [CAS No. 122-66-7]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species, a crustacean

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2180 µg/L ÷ 1000
= 2.2 µg/L
≈ 2 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 2 µg/L

# Diphenylnitrosamine [CAS No. 86-30-6]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 2 species, a fish and a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 5800 µg/L ÷ 1000
= 5.8 µg/L
≈ 6 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 6 µg/L

# Hexachlorobutadiene [CAS No. 87-68-3]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 1 species, a fish. There was an unscreened chronic toxicity value of 9.3 µg/L for *Pimephales promelas* that was cited in the USEPA water quality guidelines of 1980. This datum was used in the calculation of the LR TV but was not included in the database.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ AF
= 9.3 µg/L ÷ 200
= 0.04 µg/L

An AF of 200 was used as the lowest toxicity value was chronic.

## Marine

### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 2 species, a fish and a crustacean. There was an unscreened acute toxicity value of 32µg/L for *Pimephales promelas* that was cited in the USEPA water quality guidelines of 1980. This datum was used in the calculation of the LR TV but was not included in the database.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 32 µg/L ÷ 1000
= 0.03 µg/L

# Hexachlorocyclopentadiene [CAS No. 77-47-4]

## Freshwater

### Fails HR and MR

There was only chronic toxicity datum for 1 species (crustacea) and acute data for 1 species (green alga).

Therefore only a LR (ECL) TV could be derived. An AF of 200 was used as the lowest toxicity value was chronic).

LR (ECL) TV = lowest value ÷ 200
= 9 µg/L ÷ 200
= 0.045 µg/L

Which was rounded up to 0.05 µg/L

LR (ECL) TV = 0.05 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.05 µg/L

# Isophorone [CAS No. 78-59-1]

## Freshwater

### Fails HR an MR

There were no chronic toxicity data and only acute toxicity data for 3 species, 2 fish and 1 crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 120 000 µg/L ÷ 1000
= 120 µg/L

## Marine

There were no chronic toxicity data and only acute toxicity data for 3 species, a fish, a crustacean and a diatom.

Therefore only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 12 900 ÷ 100
= 129 µg/L

This was rounded off to 130 µg/L.

Therefore LR (interim) TV = 130 µg/L

# Aldrin [CAS No. 309-00-2]

## Freshwater

### Fails HR and MR

The available toxicity data included much data that were above the aqueous solubility cut-off of 20 µg/L (ie. twice reliable literature aqueous solubility values). When these data were removed the remaining data no longer meet the minimum requirements of the Burr Type III method and therefore this method could not be used.

There were no chronic data but there was acute toxicity data for 19 species of fish, 11 crustaceans, 6 insects, 1 mollusc and 2 amphibians.

Therefore only a LR (interim) TV could be derived. This could be done as it is a pesticide and not very toxic to plants.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ 100 |
| | = | 0.097 ÷ 100 |
| | = | 0.001 µg/L |

## Marine

### Fails HR and MR

There were chronic toxicity data for 2 species, which belonged to 2 taxonomic groups (fish and mollusca). There were acute toxicity data for 11 species, which belonged to 3 taxonomic groups (fish, crustacea and mollusca).

Therefore only a LR (interim) TV could be derived. This could be done as it is a pesticide and not very toxic to plants.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ 100 |
| | = | 0.32 ÷ 100 |
| | = | 0.003 µg/L |

# Chlordane [CAS No. 12789-03-6]

## Freshwater

### Fails HR

### MR Calculations

There was a marked outlier in the dataset (ie. the value of 9731). This data point was removed and the TV calculated using the data below:

| | | | | | |
|---|---|---|---|---|---|
| 27 | 12 | 14.49 | 7.21 | 6.37 | 108.15 |
| 50.89 | 3 | 11.8 | 24.92 | 14.49 | 19.86 |
| 9.6 | 45.33 | 11.05 | 60.85 | 46.43 | 27.23 |
| 40 | 37.82 | 50 | 10.64 | 4.8 | 0.4 |
| 63.2 | 20.94 | 20.76 | 530.71 | 970.37 | 1440 |
| 1250 | 1414.21 | 360 | 17 | 6.4 | |

| | | |
|---|---|---|
| HC1 50% | = | 0.85 |
| HC5 50% | = | 2.48 |
| HC10 50% | = | 4.24 |
| HC20 50% | = | 8.02 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 29.88.

MR TV (HC1 50%) = 0.85 ÷ 29.88 = 0.028 = 0.03 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because Chlordane can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.028 | 0.083 | 0.142 | 0.268 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.03 | 0.08 | 0.14 | 0.27 µg/L |

# Marine

## Fails HR and MR

There were chronic toxicity data for 2 species — a fish and a crustacean. There were only acute data for 12 species, which belonged to 3 taxonomic groups (fish, crustacea and mollusca).

Therefore only a LR (interim) TV could be derived. This could be done as it is a pesticide and not very toxic to plants (ie. Low algal toxicity assumed). An assessment factor of 20 was used as the lowest toxicity value was chronic.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ 20 |
| | = | 0.015 ÷ 20 |
| | = | 0.00075 µg/L |
| | ≈ | 0.001 µg/L |

The freshwater TV was of higher quality than this and should normally have been adopted for marine waters.

LR TV (HC1 50%) = 0.85 ÷ 29.88 = 0.028 = 0.03 µg/L

The HC1 50% would have been adopted for slight to moderately modified ecosystem protection because Chlordane can bioaccumulate.

The other levels of protection would be:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.028 | 0.083 | 0.142 | 0.268 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.03 | 0.08 | 0.14 | 0.27 µg/L |

However, neither the HC5 50% TV nor the HC1 50% TV provided adequate protection to 1 out of 2 species for which there was chronic toxicity data. Therefore the marine LR (interim) TV was adopted.

| | | |
|---|---|---|
| LR (interim) TV | = | 0.001 µg/L |

# DDE [CAS No. 72-55-9]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 4 species, which belonged to 2 taxonomic groups (fish and platyhelmenthes).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 32 µg/L ÷ 1000 |
| | = | 0.032 µg/L |

This was rounded down to 0.03 µg/L.

Therefore LR (ECL) TV = 0.03 µg/L

## Marine

There were chronic toxicity data for 1 species a crustacean. There were acute toxicity data for 3 species, which belong to 2 taxonomic groups (crustacea and mollusca).

Therefore only a LR (ECL) TV could be derived. An AF of 200 was used as the lowest toxicity value was chronic.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 200 |
| | = | 0.1 µg/L ÷ 200 |
| | = | 0.0005 µg/L |

# DDT [CAS No. 50-29-3]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 14.16 | 122.8 | 16.85 | 3.97 | 38.68 | 2.31 |
| 13.87 | 34.10 | 4.95 | 12.78 | 8.89 | 6.00 |
| 8.66 | 1.53 | 3.93 | 15.56 | 7.22 | 11.5 |
| 40.59 | 2.84 | 18.94 | 5.60 | 1.8 | 1.8 |
| 3.65 | 2.9 | 10.67 | 123.29 | 15.56 | 4.16 |
| 945.46 | 1.04 | 15 | 0.88 | 0.84 | 1.66 |
| 2.08 | 5.35 | 3.76 | 74.98 | 28 | 2.65 |
| 5.8 | 59.53 | 17 | 7.4 | 23 | 1 |
| 3.5 | 1.2 | 1.2 | 20 | 32 | 1.5 |
| 1.9 | 134.76 | 1.6 | 30 | 3162.41 | 6400 |
| 2277 | 8700 | 20845 | 15000 | 4624.93 | 6400 |

| | | |
|---|---|---|
| HC1 50% | = | 0.41 |
| HC5 50% | = | 0.87 |
| HC10 50% | = | 1.37 |
| HC20 50% | = | 2.55 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 70.85.

MR TV (HC1 50%) = 0.41 ÷ 70.85 = 0.00578 = 0.006 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because DDT can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.00578 | 0.0123 | 0.0193 | 0.0360 |

These were rounded off to

0.006 0.01 0.02 0.04 µg/L

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 20 species that belonged to 3 different taxonomic groups (fish, crustacea and mollusca). As DDT is a pesticide it will most probably be relatively non-toxic to alga. The data therefore, meets the minimum data requirements for the LR (interim) TV.

MR (AF) TV = lowest value ÷ 100 or ACR x 10
= 0.26 ÷ (70.85 x 10)
= 0.0004 µg/L

# Dicofol [CAS No. 115-32-2]
## Freshwater
### Fails HR and MR

There were no chronic toxicity data but acute toxicity data for 18 species which belonged to 3 different taxonomic groups (fish, insecta and mollusca).

As dicofol is a pesticide a LR (interim) TV guideline could be derived (because it would be relatively non-toxic to alga).

LR (interim) TV = lowest value ÷ 100
= 53 µg/L ÷ 100
= 0.53 µg/L

Which was rounded off to 0.5 µg/L

Therefore LR (interim) TV = 0.5 µg/L .

## Marine

There were no chronic toxicity data and only acute toxicity data for 3 species which all were crustaceans.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 138 µg/L ÷ 1000
= 0.138
≈ 0.1 µg/L

# Dieldrin [CAS No. 60-57-1]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data. There were toxicity data for 16 species that belonged to 3 taxonomic groups (fish, crustacea and insecta).

As dieldrin is a pesticide a LR (interim) TV guideline could be derived (because it would be relatively non-toxic to alga).

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ (10 x ACR) |
| | = | 0.58 µg/L ÷ (10 x 6.164) |
| | = | 0.0094 µg/L |
| | ≈ | 0.01 µg/L |

## Marine

### Fails HR and MR

There were no chronic toxicity data. There were acute toxicity data for 9 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ (10x 10 x ACR) |
| | = | 0.4 µg/L ÷ (100 x 6.164) |
| | = | 0.0006 µg/L |
| | ≈ | 0.001 µg/L |

However, the freshwater LR (interim) TV was of better quality and was therefore adopted for marine waters.

| | | |
|---|---|---|
| LR (interim) TV | = | 0.01 µg/L |

# Endosulfan [CAS No. 115-29-7]

## Freshwater

### HR calculations

The data used to derive the TV were:

| | | | | | | |
|---|---|---|---|---|---|---|
| 700 | 100 | 2.7 | 0.2 | 10 | 20 | 6.79 |

| | | |
|---|---|---|
| HC1 50% | = | 0.0288 |
| HC5 50% | = | 0.238 |
| HC10 50% | = | 0.630 |
| HC20 50% | = | 1.842 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV.

HR TV (HC1 50%) = 0.029 = 0.03 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because endosulfan can bioaccumulate and the HC5 50% did not provide adequate protection from even acute toxicity.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.0288 | 0.238 | 0.63 | 1.842 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.03 | 0.2 | 0.6 | 1.8 µg/L |

# Marine

## Fails HR

## MR calculations

The data used to derive the TV were:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.3 | 1.1 | 1.38 | 1.15 | 0.3 | 0.26 | 1.5 | 0.1 |
| 1.55 | 0.6 | 2.1 | 0.14 | 19 | 15 | 0.50 | |
| 0.98 | 0.69 | 0.24 | 0.04 | 0.28 | 17.73 | 261.08 | |
| 17.38 | 65 | 52.25 | 15.37 | 16.01 | 1.96 | 1082.13 | |
| 196.60 | | | | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.0397 |
| HC5 50% | = | 0.0954 |
| HC10 50% | = | 0.163 |
| HC20 50% | = | 0.339 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV (HC1 50%) = 0.0397 ÷ 7.295 = 0.0054 = 0.005 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because endosulfan can bioaccumulate.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.005440713 | 0.01307608 | 0.022357779 | 0.046470185 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.005 | 0.01 | 0.02 | 0.05 µg/L |

# Alpha-endosulfan [CAS No. 959-98-8]

# Freshwater

## Fails HR and MR

There were no chronic toxicity data. There were acute toxicity data for 4 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 0.16 ÷ 1000
= 0.00016
≈ 0.0002 µg/L

## Marine
### Fails HR and MR

There were no toxicity data for marine organisms. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR TV = 0.0002 µg/L

# Beta-endosulfan [CAS No. 33213-65-9]
## Freshwater
### Fails HR and MR

There were no chronic toxicity data. There were acute toxicity data for 4 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 6.6 ÷ 1000
= 0.0066 µg/L
≈ 0.007 µg/L

## Marine
### Fails HR and MR

There were no toxicity data for marine organisms. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR TV = 0.007 µg/L

# Endrin [CAS No. 72-20-8]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 0.70 | 0.98 | 6.72 | 4.30 | 1.58 | 0.55 |
| 0.45 | 0.57 | 0.85 | 0.83 | 0.95 | 0.14 |
| 0.53 | 1.05 | 1.2 | 0.15 | 1.14 | 0.46 |
| 1.62 | 1.5 | 1.8 | 3.7 | 3 | 2.95 |
| 0.35 | 4.6 | 0.9 | 0.34 | 0.44 | 2.3 |
| 0.72 | 1.22 | 0.76 | 2.51 | 0.40 | 6.34 |
| 24 | 27.50 | 20 | 14.85 | 32.03 | 62 |
| 12 | 10 | 56 | 18 | 10 | 120 |
| 180 | 228.47 | 34 | 3178.63 | 20 | |

HC1 50% = 0.12
HC5 50% = 0.24

HC10 50% = 0.37
HC20 50% = 0.64

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 5.79.

MR TV (HC1 50%) = 0.12 ÷ 5.79 = 0.0207 = 0.02 µg/L

However, this figure did not provide an adequate margin of safety for acute toxicity to several species and the default ACR of 10 was used instead.

MR TV (HC1 50%) = 0.12 ÷ 10 = 0.012 = 0.01 µg/L

The HC1 50% was adopted because endrin can bioaccumulate.

This TV did not provide adequate protection even against acute toxicity. Therefore the default AF of 10 was used to derive the TV rather than the ACR.

MR TV (HC1 50%) = 0.1236 ÷ 10 = 0.01236 = 0.01 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because endrin can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.012 | 0.024 | 0.037 | 0.064 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.02 | 0.04 | 0.06 |

# Marine

## Fails HR

## MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 0.60 | 0.39 | 0.39 | 0.92 | 0.40 | 0.30 |
| 0.31 | 1.29 | 0.48 | 0.06 | 1.3 | 0.09 |
| 0.32 | 2.60 | 1.2 | 0.63 | 3.1 | 0.17 |
| 15 | 2 | 1.05 | 0.4 | 6.38 | 0.65 |
| 2.78 | 0.2 | 0.04 | 65.71 | 360 | |

HC1 50% = 0.0363
HC5 50% = 0.0775
HC10 50% = 0.119
HC20 50% = 0.2079

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 5.79.

MR TV (HC1 50%) = 0.0363 ÷ 5.79 = 0.0063 = 0.006 µg/L. However, this did not provide an adequate margin of safety for acute toxicity and the default ACR of 10 was used.

MR TV (HC1 50%) = 0.0363 ÷ 10 = 0.00363 = 0.004 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because endrin can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.00363 | 0.00775 | 0.0119 | 0.02079 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.004 | 0.008 | 0.01 | 0.02 µg/L |

# Heptachlor [CAS No. 76-44-8]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 63 | 185 | 6.20 | 161.72 | 163.71 | 19.55 |
| 17.88 | 10 | 13.53 | 17 | 30.94 | 42 |
| 44.13 | 39.52 | 1.97 | 1.8 | 53.68 | 2.8 |
| 0.9 | 1.1 | 32.78 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.063 |
| HC5 50% | = | 0.67 |
| HC10 50% | = | 1.87 |
| HC20 50% | = | 5.23 |

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (fish) was 7.5.

MR TV (HC1 50%) = 0.063 ÷ 7.5 (ACR) = 0.0084 = 0.01 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because heptachlor can bioaccumulate.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0084 | 0.089 | 0.249 | 0.697 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.09 | 0.25 | 0.7 µg/L |

## Marine
### Fails HR and MR

There was 1 chronic toxicity datum, which was for a crustacean. There were acute toxicity data for 15 species, which belonged to 3 taxonomic groups (fish, crustacea and mollusca).

As heptachlor is a pesticide a LR (interim) TV guideline could be derived (because it would have relatively low toxicity to alga).

LR (interim) TV = lowest value ÷ (10x ACR)
= 0.03 µg/L ÷ (10 x 7.5)
= 0.0004 µg/L

The freshwater TV was of higher quality than the TV for marine waters and would normally be adopted for marine waters. However, it did not provide adequate protection against acute toxicity for 1 species of crustacean and marginal protection for another. Therefore the marine LR(interim) TV was adopted.

LR (interim) TV = 0.0004 µg/L

# Lindane [CAS No. 58-89-9]
## Freshwater
## HR Calculations

There were chronic toxicity data for *Jordanella floridae* but these were not used to derive the TV as they were greater than the aqueous solubility cut-off of 34 000 µg/L (ie. twice reliable literature values for aqueous solubility).

The data used to derive the TV were:

150 2.67 12 55 1264.99
1400 634.51

HC1 50% = 0.0171
HC5 50% = 0.859
HC10 50% = 4.64
HC20 50% = 25.07

HR TV (HC5 50%) = 0.86 = 0.9 µg/L

## MR Calculations:

However, this TV did not provide adequate protection from even acute toxicity. So a MR TV was derived using acute toxicity data.

| | | | | | |
|---|---|---|---|---|---|
| 64 | 650 | 321.61 | 473.10 | 10069.76 | 1.5 |
| 114.08 | 146.19 | 131.94 | 19.5 | 25.71 | 196.15 |
| 524.63 | 507.17 | 73.5 | 1012.87 | 184.39 | 146.20 |
| 432.03 | 153.78 | 84.12 | 32 | 7.3 | 116.65 |
| 38.78 | 32.78 | 274.28 | 51.86 | 77.35 | 58.13 |
| 9.13 | 29.07 | 461.50 | 141.97 | 38.16 | 375 |
| 10 | 1100 | 3.2 | 904.7 | 460 | 13.38 |
| 75.63 | 8.62 | 619.67 | 5.02 | 27.26 | 19.17 |
| 207 | 330 | 150 | 9.6 | 130 | 3.08 |
| 3.9 | 2685 | 2331 | 6233 | 2545.58 | 2500 |
| 3200 | 5210.9 | 1773.41 | | | |

HC1 50% = 0.671
HC5 50% = 4.14
HC10 50% = 9.58
HC20 50% = 24.27

MR TV (HC5 50%) = 4.14 ÷25.10 (ACR) = 0.164 ≈ 0.2 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0671 | 0.165 | 0.3817 | 0.977 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.07 | 0.2 | 0.4 | 1 µg/L |

# Marine
## Fails HR
## MR Calculations

There were no chronic data for marine species. There were acute toxicity data for 14 species that belonged to 3 taxonomic groups (fish, crustacea and mollusca). Lindane is a pesticide and is therefore likely to have relatively low toxicity to plants and algae. Therefore, a LR (interim) TV could be derived for Lindane using an AF of 100.

Therefore only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 0.66 µg/L ÷ 100
= 0.0066 µg/L
≈ 0.007 µg/L

# **Methoxychlor** [CAS No. 72-43-5]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 28 species, which belonged to 3 taxonomic groups (fish, crustacea and insecta). Methoxychlor is a pesticide therefore a LR (interim) TV does not require alga toxicity data.

Therefore only a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ 100
= 0.5 µg/L ÷ 100
= 0.005 µg/L

# Marine

There were no chronic toxicity data and only acute toxicity data for 21 species, which belonged to 3 taxonomic groups (fish, crustacea and mollusca).

Therefore Can derive an LR (interim) TV.

LR (interim) TV = lowest value ÷ 100
= 0.42 µg/L ÷ 100
= 0.0042 µg/L

This was rounded off to 0.004 µg/L

Therefore LR (interim) TV = 0.004 µg/L

# Mirex [CAS No. 2385-85-5]

## Freshwater

### Fails HR and MR

There were no chronic data. There were acute toxicity data for 4 species, which belonged to 3 taxonomic groups (crustacea, insecta and hydra).

Therefore a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 40 µg/L ÷ 1000
= 0.04 µg/L

## Marine

### Fails HR and MR

There were no toxicity data for marine organisms. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR TV = 0.04 µg/L

# Toxaphene [CAS No. 8001-35-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 5.54 | 28.92 | 9.39 | 16.94 | 8.10 | 10.32 |
| 13 | 3.90 | 2 | 5.59 | 9.12 | 7.10 |
| 12 | 11.13 | 3.05 | 18.55 | 1.4 | 10.42 |
| 10.92 | 17.61 | 24 | 15.34 | 40 | 73.48 |
| 1.76 | 3.33 | 18 | 740 | 380 | 76 |
| 107.83 | 34 | 115.12 | 195 | | |

HC1 50% = 1.16
HC5 50% = 2.17
HC10 50% = 3.10
HC20 50% = 4.91

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 9.80.

MR TV (HC1 50%) = 1.16 ÷ 9.80 = 0.0.118 = 0.1 µg/L
The HC1 50% was adopted for slight to moderately modified ecosystem protection because toxaphene can bioaccumulate.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.118367347 | 0.221428571 | 0.316326531 | 0.5 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 0.2 | 0.3 | 0.5 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data. There were acute toxicity data for 13 species, which belonged to 3 taxonomic groups (fish, crustacea and mollusca). As toxaphene is a pesticide a LR (interim) TV could be derived.

LR (interim) TV = lowest value ÷ (10 x ACR)
= 0.054 ÷ (10 x 8.65)
= 0.0006 µg/L

The freshwater TV was of higher quality than the TV for marine waters and would normally be adopted for marine waters. However, it did not provide adequate protection against acute toxicity for 1 species of crustacean. Therefore the marine LR(interim) TV was adopted.

LR (interim) TV = 0.0006 µg/L

# Guthion (azinphosmethyl) [CAS No. 86-50-0]
## Freshwater
### Fails HR
### MR calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 3500 | 2107.32 | 695 | 0.36 | 3272.36 | 52 |
| 13.41 | 4.87 | 6.32 | 6.83 | 8.52 | 268.42 |
| 3.0 | 2.1 | 4.01 | 6.22 | 21.0 | 1.57 |
| 0.15 | 0.29 | 0.46 | 56 | 0.37 | 12.28 |
| 11.21 | 899.91 | | | | |

HC1 50% = 0.089
HC5 50% = 0.25
HC10 50% = 0.47
HC20 50% = 1.12

Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 0.25 ÷ 10 = 0.025 = 0.025 µg/L

However, this TV was too close to the acute data and therefore did not provide adequate protection. Therefore, the HC1 50% was adopted as the MR TV.

MR TV = 0.089 ÷ 10 = 0.0089 = 0.009 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.0089 | 0.025 | 0.047 | 0.112 |

These were rounded off to

0.01 0.02 0.05 0.1 µg/L

## Marine
### Fails HR and MR

There were no chronic toxicity data. There were acute toxicity data for 5 species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore, only a LR (ECL) TV could be derived. However, the freshwater TV was of better quality and therefore was adopted for marine waters.

LR TV (HC1 50%) = 0.025 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the difference between the TV and the most sensitive acute toxicity data was not deemed to be adequate (i.e. < 3).

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.0089 | 0.025 | 0.047 | 0.112 |

These were rounded off to

0.01 0.02 0.05 0.1 µg/L

# Chlorpyrifos [CAS No. 2921-88-2]
## Freshwater
### HR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 0.57 | 0.075 | 0.065 | 0.5 | 200 |
| 10 | 100 | 100 | 100 | 10 |
| 100 | 330 | | | |

HC1 50% = 0.00004369
HC5 50% = 0.01067
HC10 50% = 0.1139
HC20 50% = 1.216

HR TV (HC5 50%) = 0.0107 = 0.01 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00004369 | 0.01067 | 0.1139 | 1.216 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.00004 | 0.01 | 0.11 | 1.2 µg/L |

# Marine
## HR Calculations

The data used to derive the TV were:

0.25 0.75 0.28 0.38 1.4 0.003 2000 10000 10000 600 150 2000

HC1 50% = 0.00049
HC5 50% = 0.0089
HC10 50% = 0.040
HC20 50% = 0.26

HR TV (HC1 50%) = 0.00049 = 0.0005 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00049 | 0.0089 | 0.04 | 0.26 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.0005 | 0.009 | 0.04 | 0.3 µg/L |

# Demeton-S [CAS No. 8065-48-3]
# Freshwater
## Fails HR and MR

There were only acute toxicity data for 4 species which belonged to 1 taxonomic group (fish).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 40 µg/L ÷ 1000
= 0.04 µg/L

# Marine

There were only toxicity data for 2 marine species, which belonged to 2 different taxonomic groups (fish and mollusca).

Therefore only a LR (ECL) TV could be derived.
∴
LR (ECL) TV = lowest value ÷ 1000
= 320 µg/L ÷ 1000
= 0.32 µg/L
= 0.3 µg/L

# Demeton-S-methyl [CAS No. 919-86-8]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 4 species which belonged to 1 taxonomic group, mollusca.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 3700 µg/L ÷ 1000
= 3.7 µg/L

This was rounded to 4 µg/L

LR (ECL) TV = 4 µg/L

## Marine

There were no toxicity data for marine species. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 4 µg/L

# Diazinon [CAS No. 333-41-5]

## Freshwater

### Fails HR

### MR calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1897.37 | 6160 | 21 | 250 | 0.46 | 1.1 |
| 0.65 | 0.2 | 237.96 | 2.88 | 11.97 | 537 |
| 1.52 | 3200 | 8000 | 94.12 | 2800 | 6328.77 |
| 3584.65 | 7935.17 | 7354.13 | 642.24 | 3186.77 | 1273 |
| 2461.80 | 8000 | 1628.65 | 171.43 | 224.07 | 2354.06 |
| 515.93 | 6472.57 | 2165.46 | 602 | 734.51 | 1492.5 |
| 83.50 | 36.33 | 0.22 | 7.8 | 50 | 140 |
| 79.43 | 37.00 | 16000 | 11000 | 20000 | 4800 |
| 2500 | 48 | 9500 | 11000 | | |

HC1 50% = 0.00058
HC5 50% = 0.21
HC10 50% = 2.74
HC20 50% = 34.96

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species for which data were available was 17.5.

MR TV (HC5 50%) = 0.21 ÷ 17.5 = 0.012 = 0.01 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.31E-05 | 0.012 | 0.156 | 1.998 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.00003 | 0.01 | 0.2 | 2 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 2 species, which belonged to 1 taxonomic group (crustacea).

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of a higher quality than this and therefore it was adopted for marine waters.

LR TV (HC5 50%) = 0.01 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 3.31E-05 | 0.012 | 0.156 | 1.998 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.00003 | 0.01 | 0.2 | 2 µg/L |

# Dimethoate [CAS No. 60-51-5]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 4 784 | 30 431.1 | 10 500 | 10 100 | 65 | 4 650 |
| 8 851.26 | 10 200 | 6 546.82 | 2.3 | 22 000 | 7 327.59 |
| 117 716.84 | 42 569.97 | 29 853.35 | 5.20 | 2 | 2.6 |
| 1 074.87 | 237.84 | 2.2 | 3 016.15 | 68.95 | 3.10 |
| 2.9 | 24.5 | 35.8 | 5 358 | 407 524.24 | 7.82 |

The above data that would normally have been used to derive the MR TV. However, the data had a marked bi-modal distribution. Therefore, only the data that belonged to the more sensitive group (shown below) were used to derive the MR TV.

| | | | | | |
|---|---|---|---|---|---|
| 65 | 2.3 | 5.20 | 2 | 2.6 | 2.2 |
| 68.95 | 3.10 | 2.9 | 24.5 | 35.8 | 7.82 |

| | | |
|---|---|---|
| HC1 50% | = | 0.96 |
| HC5 50% | = | 1.44 |
| HC10 50% | = | 1.86 |
| HC20 50% | = | 2.62 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 1.44 ÷ 10 = 0.144 = 0.15 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.096 | 0.144 | 0.186 | 0.262 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 0.15 | 0.2 | 0.3 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 4 species that belonged to 2 taxonomic groups (fish and diatoms).

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 0.15 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.096 | 0.144 | 0.186 | 0.262 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 0.15 | 0.2 | 0.3 µg/L |

# Fenitrothion [CAS No. 122-14-5]
## Freshwater
### Fails HR
### MR Calculations

The acute toxicity data that would normally have been used to derive the MR TV had a marked bi-modal distribution. Therefore, only the data that belonged to the more sensitive group (shown below) were used to derive the MR TV. Despite this all the acute toxicity data are in the database.

| | | | | | | |
|---|---|---|---|---|---|---|
| 203.28 | 7.96 | 2.70 | 18 | 11.40 | 8.85 | 3 |
| 4.43 | 0.92 | 2.08 | 37.76 | 35.16 | 269 | 346.41 |
| 1.77 | 1.5 | 1.6 | 3.22 | 4.21 | 6.14 | 21 |
| 89.64 | 61.85 | 55 | 39 | 5.87 | 6.36 | 177.51 |
| 82 | 148 | 9.27 | 11.03 | 10.27 | 17.94 | 800 |

HC1 50% = 0.769
HC5 50% = 1.438
HC10 50% = 2.109
HC20 50% = 3.552

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (algae) was 8.

MR TV = 1.438 ÷ 8 = 0.179 = 0.18 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.0960875 | 0.17975 | 0.263625 | 0.444 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 0.2 | 0.3 | 0.4 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data. However, there were acute toxicity data for 14 species that belonged to 3 taxonomic groups (fish, crustacea and mollusca).

As there were 3 taxonomic groups and Fenitrothion is a pesticide then toxicity data for plants was not required to derive a LR (interim) TV.

LR (interim) TV = lowest value ÷ 100
= 0.1 µg/L ÷ 100
= 0.001 µg/L

The freshwater TV was of higher quality than the marine TV and would therefore, normally be adopted for marine waters. Given the high sensitivity of the lobster (0.1 µg/L) it was preferable to derive a low reliability TV using a high AF than to adopt the FW figure. Low algal toxicity was assumed, allowing for use of an AF of 100.

LR TV = 0.001 µg/L

# Malathion [CAS No. 121-75-5]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 7523.79 | 8178.59 | 14163.22 | 1420 | 4594 | 13290.14 |
| 269.49 | 51.94 | 77 | 311.61 | 166.77 | 76.96 |
| 263 | 14173.40 | 1376.94 | 455 | 6000 | 4100 |
| 126.83 | 76 | 64 | 1007.47 | 2259.69 | 16200 |
| 2 | 1.75 | 2 | 2 | 1 | 1457.02 |
| 117.446 | 7862.22 | 37.80 | 4.23 | 15.13 | 1.94 |
| 39.98 | 49.80 | 126270 | 12445.88 | 31.1 | 37.40 |
| 2449.40 | 29933.26 | 0.61 | | | |

HC1 50% = 0.032
HC5 50% = 0.89
HC10 50% = 3.96
HC20 50% = 19.75

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (fish) was 17.46.

MR TV = 0.89 ÷ 17.46 = 0.0510 = 0.05 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00183 | 0.051 | 0.227 | 1.131 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.002 | 0.05 | 0.2 | 1.1 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 4 species that belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 0.05 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00183 | 0.051 | 0.227 | 1.131 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.002 | 0.05 | 0.2 | 1.1 µg/L |

# Parathion [CAS No. 56-38-2]
## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 5640 | 2104.81 | 271.93 | 28896.18 | 2957.19 | 305.18 |
| 262.43 | 699.60 | 4900 | 2946.65 | 2081.0 | 1495.44 |
| 1799.65 | 1920 | 18.67 | 648.09 | 0.23 | 0.85 |
| 0.6 | 1.19 | 5.90 | 0.04 | 1.5 | 0.43 |
| 2.2 | 3.37 | 7.25 | 2.89 | 64.69 | 1.99 |
| 2.23 | 1.1 | 15 | 6.84 | 5.10 | 4.62 |
| 19.55 | 7.14 | 29 | 7079.30 | 22313.44 | 7100 |
| 2900 | 15000 | 4624.93 | 20845.12 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.050 |
| HC5 50% | = | 0.28 |
| HC10 50% | = | 0.73 |
| HC20 50% | = | 2.64 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 71.2.

MR TV = 0.276 ÷ 71.21 = 0.0038 = 0.004 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00070 | 0.0039 | 0.010 | 0.037 |

These were rounded off to

0.0007 0.004 0.01 0.04 µg/L

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute toxicity data for 2 species — a fish and an annelid.

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 0.004 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00070 | 0.0039 | 0.010 | 0.037 |

These were rounded off to

0.0007 0.004 0.01 0.04 µg/L

# Profenofos [CAS No. 41198-08-7]
## Freshwater
### Fails HR and MR

There were chronic toxicity data for 2 species — a crustacean and a green alga. There were only acute toxicity data for 8 species, 6 fish and 2 crustaceans.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 21 µg/L ÷ 1000
= 0.02 µg/L

The toxicity value of 21 was used as the crustacean toxicity data although lower had not been published.

## Marine
There were no chronic toxicity data and only acute toxicity data for 2 species, both crustaceans.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 2.4 ÷ 1000
= 0.002 µg/L

# Temephos [CAS No. 3383-96-8]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data and only acute data for 30 species that belonged to 3 taxonomic groups (fish, crustacea and insecta).

As there were toxicity data for 3 taxonomic groups and Temephos is a pesticide, toxicity data for alga were not required to derive a LR (interim) TV.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 100 |
| | = | 8 ÷ 100 |
| | = | 0.08 µg/L |

NOTE: The value of 8 used to derive the TV was not the lowest. The lowest value was of 0.092 for a mosquito — one of the target organisms of the pesticide. Therefore toxicity data for that type of organism were not used to derive the TV.

However, the TV for marine waters was of higher quality than that for freshwater and therefore it was adopted for freshwaters.

LR TV = 0.05 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.00036 | 0.051 | 0.428 | 3.626 |

These were rounded off for

| | | | |
|---|---|---|---|
| 0.0004 | 0.05 | 0.4 | 3.6 |

## Marine

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 7500 | 1200 | 5037.9 | 40 | 11400 | 1000 |
| 23 | 600 | 320 | 130 | 3000 | 45 |
| 4100 | 10 | 8.58 | 1 | 45 | 8 |
| 58000 | 8600 | 1500 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.0036 |
| HC5 50% | = | 0.51 |
| HC10 50% | = | 4.28 |
| HC20 50% | = | 36.26 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 0.51 ÷ 10 = 0.051 = 0.05 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.00036 | 0.051 | 0.428 | 3.626 |

These were rounded off for

| | | | |
|---|---|---|---|
| 0.0004 | 0.05 | 0.4 | 3.6 |

# Carbofuran [CAS No. 1563-66-2]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 908.45 | 7900 | 5100 | 268.63 | 1105.44 | 1045.87 |
| 604.33 | 570.18 | 248.66 | 4800 | 164.92 | 269.74 |
| 193.16 | 353.67 | 1442 | 530 | 633.54 | 176.15 |
| 1106.72 | 3400 | 424.40 | 162.66 | 893.54 | 309.84 |
| 0.33 | 2.45 | 64.29 | 35 | 157.3 | 46052.16 |
| 1.56 | 4.6 | 500 | 56 | 3808 | 5294 |
| 15874.51 | 20020.92 | 22308.89 | 204480 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.31 |
| HC5 50% | = | 5.73 |
| HC10 50% | = | 20.39 |
| HC20 50% | = | 75.12 |

Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 4.901.

MR TV = 5.73 ÷ 4.901 = 1.169 = 1.2 µg/L

The above TV did not provide adequate protection from acute toxicity to crustaceans, therefore, the default ACR, of 10, was then used to derive the MR TV. However, this also did not reduce the MR TV so that it was below the $LC_{50}$ for the most sensitive crustacean species.

Therefore the HC1 50% and the ACR was used to derive the MR TV.

MR TV = 0.31 ÷ 4.901 = 0.06325 = 0.06 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.0633 | 1.169 | 4.160 | 15.327 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.06 | 1.2 | 4 | 15 µg/L |

## Marine
### Fails HR and MR

There were chronic toxicity data for only 2 species — a fish and a crustacean. There were acute data for 5 species that belonged to 2 taxonomic groups (fish and crustaceans).

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality and therefore was adopted for marine waters.

LR TV = 0.06 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0633 | 1.169 | 4.160 | 15.327 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.06 | 1.2 | 4 | 15 µg/L |

# Methomyl [CAS No. 16752-77-5]

There were a number of methomyl toxicity data which did not state the type of media that was used (ie. freshwater or marine). These data were not used to derive TVs.

## Freshwater
### Fails HR
### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1700 | 1892.51 | 366.97 | 863.72 | 974.68 | 750 |
| 4050 | 1516.49 | 1983.04 | 1013.16 | 1590.83 | 1291.05 |
| 190 | 220 | 37.05 | 886.01 | 760 | 32 |
| 60 | 29 | 1100 | 870 | 6600 | 18000 |
| 12000 | | | | | |

HC1 50% = 4.54
HC5 50% = 34.25
HC10 50% = 92.64
HC20 50% = 234.19

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV = 34.25 ÷ 10 = 3.425 = 3.5 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.454 | 3.425 | 9.264 | 23.419 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.5 | 3.5 | 9.5 | 23 µg/L |

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 10 species which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality and therefore was adopted for marine waters.

LR TV = 3.5 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.454 | 3.425 | 9.264 | 23.419 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.5 | 3.5 | 9.5 | 23 µg/L |

# S-methoprene [CAS No. 40596-69-8]
## Freshwater
### Fails HR and MR

There were only chronic toxicity data for 1 species — a fish. There were acute data for 6 species which belonged to 3 taxonomic groups (fish, crustacea and mollusca).

As there were data for 3 taxonomic groups and S-methoprene is a pesticide with a specific mode of action, toxicity data for alga were not needed to derive a LR (interim) TV.

LR (interim) TV = lowest value ÷ 100
= 20 ÷ 100
= 0.2 µg/L

## Marine
### Fails HR and MR

There were no chronic toxicity data and only acute data for 4 species that belonged to 2 taxonomic groups (fish and crustacea). As S-methoprene is a pesticide it was expected to have relatively low toxicity to plants and therefore a LR (interim) TV could be derived without algae.

LR (interim) TV = lowest value ÷ 100
= 2000 µg/L ÷ 100
= 20 µg/L

# Deltamethrin [CAS No. 52918-63-5]
## Freshwater
### Fails HR and MR

There were no chronic toxicity data. There were only acute toxicity data for 7 species, 3 fish, 1 crustacean, 1 insect and 2 molluscs. However, some of these exceeded two times reliable literature values for the aqueous solubility (ie. 8 µg/L). The remaining acute toxicity data consisted of 1 fish, 1 crustacean, and 1 insect.

Therefore only an LR (Interim) TV could be derived.

LR (Interim) TV TV = lowest value ÷ 100
= 0.01 µg/L ÷ 100
= 0.0001 µg/L

NOTE: the lowest value was not used as it was much lower than other data for the same species, and was considered anomalous. Therefore the next lowest value was used.

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted.

Therefore LR (ECL) TV = 0.0001 µg/L

# Esfenvalerate [CAS No.

## Freshwater

### Fails HR and MR

There were insufficient chronic toxicity data to derive a HR TV and there were only acute data for 6 species that belonged to 3 taxonomic groups (fish, crustacea and amphibia).

As there were data for 3 taxonomic groups and Esfenvalerate is a pesticide, toxicity data for alga was not needed to derive a LR (interim) TV.

There were sufficient multiple species toxicity data obtained from mesocosm studies. Therefore, a MS HR TV could be derived.

HR TV = lowest value ÷ 10
= 0.01 µg/L ÷ 10
= 0.001 µg/L

## Marine

### Fails HR and MR

There were no data for marine organisms. Therefore the freshwater MS HR TV was adopted for marine waters.

HR TV = 0.001 µg/L

# Diquat [CAS No. 85-00-7]

## Freshwater

### Fails HR

### MR calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 89250.57 | 41402.96 | 84000 | 1895799.57 | 289000 |
| 79241.81 | 10297.72 | 9055.07 | 10805.87 | 56635.98 |
| 28500 | 43899.22 | 28557.96 | 16800 | 20600 |
| 54947.91 | 2051.55 | 13800 | 3000 | 19 |
| 19 | 46600 | 3400 | 73 | 19 |
| 42 | 65 | | | |

HC1 50% = 0.12
HC5 50% = 13.76
HC10 50% = 106.10
HC20 50% = 818.8

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 13.76 ÷ 10 = 1.376 = 1.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.012 | 1.376 | 10.61 | 81.882 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 1.4 | 10 | 80 µg/L |

## Marine
### Fails HR and MR

There were no data for marine organisms. Therefore the freshwater LR (interim) TV was adopted for marine waters.

LR TV = 1.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.012 | 1.376 | 10.61 | 81.882 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 1.4 | 10 | 80 µg/L |

# Paraquat [CAS No. 1910-42-5]
## Freshwater
### Fails HR and MR

There were no chronic toxicity data. There were acute toxicity for 21 species, which belonged to 3 taxonomic groups (fish, crustacea and amphibia). As Paraquat is a herbicide it must have toxicity data for alga in order to derive an LR (Interim) TV.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 500 µg/L ÷ 1000
= 0.5 µg/L

## Marine
There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 0.5 µg/L

# MCPA [CAS No. 94-74-6]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 8 species, 6 fish, 1 crustacean and 1 insect.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1440 µg/L ÷ 1000
= 1.4 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted.

Therefore LR (ECL) TV = 1.4 µg/L

# 2,4-D [CAS No. 94-75-7]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 342484.29 | 160000 | 1296382.63 | 39368.23 | 83494.73 |
| 7000 | 3800 | 26061.06 | 105788.37 | 92101.27 |
| 3100 | 163033.06 | 43909.00 | 70149.98 | 64000 |
| 70913.84 | 4800 | 2780000 | 46692.45 | 2000000 |
| 3100000 | 6170.90 | 45000 | 18063.84 | 236000 |
| 63815.66 | 17614 | 144100 | 2771.28 | 4900 |
| 1850 | 6538.93 | 6602.89 | 117000 | 224588.51 |

HC1 50% = 1392
HC5 50% = 2911
HC10 50% = 4572
HC20 50% = 8454

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (fish) was 10.22.

MR TV = 2911 ÷ 10.22 = 284.8 = 285 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 136.2035225 | 284.8336595 | 447.3581213 | 827.2015656 |

These were rounded off to

140 280 450 830 µg/L

# Marine
## Fails HR and MR

There were no chronic toxicity data and only acute data for 4 species that belonged to 3 taxonomic groups (fish, crustacea and mollusca).

Despite being a herbicide 2,4-D seemed to have very low toxicity to alga. Therefore because there were 3 taxonomic groups a LR (interim) TV could be derived.

| | | |
|---|---|---|
| LR (interim) TV | = | lowest value ÷ 100 |
| | = | 1500 ÷ 100 |
| | = | 15 µg/L |

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

LR TV = 2911 ÷ 10.22 = 284.8 = 285 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 136.2035225 | 284.8336595 | 447.3581213 | 827.2015656 |

These were rounded off to

| | | | |
|---|---|---|---|
| 140 | 280 | 450 | 830 µg/L |

# 2,4,5-T [CAS No.
# Freshwater
## Fails HR
## MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1: 13000 | 2: 58033.39 | 3: 105028.63 | 4: 51672.72 | 5: 6048.14 | 6: 2900 |
| 7: 34134.33 | 8: 30651.88 | 9: 15062.94 | 10: 23410.03 | 11: 20652.34 | 12: 600 |
| 13: 1762.10 | 14: 19400 | 15: 1000 | 16: 32823.80 | 17: 9400 | 18: 8300 |
| 19: 120 | 20: 88000 | 21: 5000 | 22: 2700 | 23: 118357.07 | |
| 24: 112904.87 | 25: 3297.56 | | | | |

| | | |
|---|---|---|
| HC1 50% | = | 31.92 |
| HC5 50% | = | 359.14 |
| HC10 50% | = | 1020 |
| HC20 50% | = | 2917 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV = 359.14 ÷ 10 = 35.914 = 36 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 3.192 | 35.914 | 102 | 291.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 3 | 36 | 100 | 290 µg/L |

## Marine
### Fails HR and MR

There were no toxicity data for marine organisms. Therefore the freshwater MR TV was adopted for marine waters.

LR TV = 36 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 3.192 | 35.914 | 102 | 291.7 |

These were rounded off to

| | | | |
|---|---|---|---|
| 3 | 36 | 100 | 290 µg/L |

# Bensulfuron [CAS No.
## Fresh and Marinewater

There were no toxicity data. So no TV was derived.

# Metsulfuron
## Fresh and Marinewater

There were no toxicity data. So no TV was derived.

# Molinate [CAS No. 2212-67-1]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 20510 | 1114.09 | 17980.36 | 34000 | 36879.34 | 4701.78 |
| 9696.97 | 3535.39 | 13000 | 400 | 430 | 180 |
| 600 | 673.16 | 5848.08 | 2400 | 5600 | 8698.11 |
| 9263.91 | 25533.33 | 461.61 | 34000 | 19798.99 | |

| | | |
|---|---|---|
| HC1 50% | = | 2.82 |
| HC5 50% | = | 74.67 |
| HC10 50% | = | 306.1 |
| HC20 50% | = | 1254 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all freshwater species for which data were available was 21.82.

MR TV = 74.67 ÷ 21.82 = 3.42 = 3.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.129 | 3.422 | 14.028 | 57.470 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 3.4 | 14 | 57 µg/L |

## Marine

### Fails HR and MR

There were chronic data for 1 species — a crustacean. There were acute toxicity data for 2 species — a fish and a mollusc.

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality and therefore was adopted for marine waters.

LR TV = 74.67 ÷ 21.82 = 3.42 = 3.4 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.129 | 3.422 | 14.028 | 57.470 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.1 | 3.4 | 14 | 57 µg/L |

# Thiobencarb [CAS No. 28249-77-6]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 1500 | 890 | 1510 | 1016.40 | 1164 | 2450 |
| 2184.24 | 1598.08 | 2540 | 709.36 | 1138.06 | 760 |
| 1990 | 1658.8 | 510 | 1200 | 896.28 | 3470 |
| 2000 | 1244.98 | 5800 | 15000 | 67069.31 | 5200 |
| 5000 | 3523.25 | 23.86 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 91.54 |
| HC5 50% | = | 270.0 |
| HC10 50% | = | 438.4 |
| HC20 50% | = | 737.2 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species (crustaceans) was 95.

MR TV = 270 ÷ 95 = 2.84 = 2.8 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.963578947 | 2.842105263 | 4.614736842 | 7.76 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1 | 2.8 | 4.6 | 8 µg/L |

## Marine

There were chronic toxicity data for 1 crustacean. However, there were acute data for 1 species of fish, 2 crustaceans and 1 diatom. Therefore only an interim TV can be derived.

| | | |
|---|---|---|
| Interim TV | = | lowest value ÷ 20 |
| | = | 3.2 ÷ 20 |
| | = | 0.16 µg/L |

An AF of 20 was used as the lowest toxicity value was chronic.

However, the freshwater TV was of higher quality than this and was therefore adopted for marine waters.

LR TV = 270 ÷ 95 = 2.84 = 2.8 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.963578947 | 2.842105263 | 4.614736842 | 7.76 |

These were rounded off to

| | | | |
|---|---|---|---|
| 1 | 2.8 | 4.6 | 7.8 µg/L |

# Thiram [CAS No. 137-26-8]

## Freshwater

### Fails HR

### MR calculations

The data used to derive the TV were:

| | | | | |
|---|---|---|---|---|
| 3700 | 277.56 | 9.2 | 34.64 | 7.04 |
| 7500 | 0.74 | 254.95 | 7500 | 270 |
| 210 | 283.14 | 4300 | 103.17 | 173.21 |
| 5500 | 1000 | 16.86 | | |

| | | |
|---|---|---|
| HC1 50% | = | 0.0777 |
| HC5 50% | = | 1.88 |
| HC10 50% | = | 7.52 |
| HC20 50% | = | 31.6 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV (HC1 50%) = 0.0777 ÷ 10 = 0.00777 = 0.01 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the TV did not provide adequate protection from acute toxicity to fish.

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.00777 | 0.188 | 0.752 | 3.16 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.2 | 0.8 | 3.0 µg/L |

## Marine

### Fails HR and MR

There were no toxicity data for marine organisms. Therefore the freshwater TV was adopted for marine waters.

| | | |
|---|---|---|
| LR TV | = | 0.01 µg/L |

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.00777 | 0.188 | 0.752 | 3.16 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.01 | 0.2 | 0.8 | 3.2 µg/L |

# Amitrole [CAS No. 61-82-5]

## Freshwater

### Fails HR and MR

There were no chronic toxicity data. However, there were acute toxicity data for 7species, which belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 22,100 µg/L ÷ 1000 |
| | = | 22.1 µg/L |

This was rounded off to 22 µg/L.

Therefore LR (ECL) TV = 22 µg/L

## Marine

There were no toxicity for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 22 µg/L

# Atrazine [CAS No. 1912-24-9]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 16733.20 | 91258.05 | 33778.26 | 258000 | 18900 | 12862.46 |
| 33603.16 | 55497.75 | 14074.80 | 63245.55 | 15000 | 41324.10 |
| 5253.57 | 5328.16 | 18300 | 19302.85 | 35600 | 5700 |
| 14900 | 1000 | 720 | 48.06 | 287.21 | |

This data contained one marked outlier — the value of 258 000. This value was removed and the TV recalculated below.

| | | |
|---|---|---|
| HC1 50% | = | 14.29 |
| HC5 50% | = | 254.26 |
| HC10 50% | = | 878.41 |
| HC20 50% | = | 3035 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. The ACR for all species was 20.21.

MR TV = 254.26 ÷ 20.21 = 12.58 = 13 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.707 | 12.581 | 43.464 | 150.173 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.7 | 13 | 45 | 150 µg/L |

## Marine
### Fails HR and MR

There were chronic toxicity data for 1 species, a crustacean. There were only acute data for 6 species that belonged to 3 taxonomic groups (fish and crustacea). Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ (100 x ACR) |
| | = | 50 ÷ (100 x 20.22) |
| | = | 0.0247 |
| | ≈ | 0.025 µg/L |

However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 254.26 ÷ 20.21 = 12.58 = 13 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.707075705 | 12.58090054 | 43.46412667 | 150.1731816 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.7 | 13 | 45 | 150 µg/L |

# Hexazinone [CAS No. 51235-04-2]
## Freshwater
### Fails HR and MR

There were no chronic toxicity data. There were only acute toxicity data for 8 species all of which were fish.

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 75000 µg/L ÷ 1000 |
| | = | 75 µg/L |

## Marine
There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine species.

Therefore LR (ECL) TV = 75 µg/L

# Simazine
## Freshwater
### Fails HR
### MR Calculations

A number of the acute toxicity data for simazine were greater than the maximum acceptable solubility of 7000 µg/L (ie. twice reliable literature aqueous solubility values). These data were removed and those used to derive the TV are presented below.

| | | | | | |
|---|---|---|---|---|---|
| 3535.53 | 3674.23 | 331.66 | 6600 | 90 | 3420.51 |
| 3100 | 3440.93 | 1048.81 | 3580 | 1900 | 2.24 |

HC1 50% = 1.99
HC5 50% = 32.36
HC10 50% = 107.1
HC20 50% = 354.5

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 32.36 ÷ 10 = 3.236 = 3.2 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.2 | 3.236 | 10.712 | 35.453 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.2 | 3.2 | 11 | 35 µg/L |

## Marine
### Fails HR and MR

There were no toxicity data for marine organisms. Therefore the freshwater TV was adopted for marine waters.

LR TV = 3.2 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.2 | 3.236 | 10.712 | 35.453 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.2 | 3.2 | 11 | 35 µg/L |

# Diuron [CAS No. 330-54-1]
## Freshwater
### Fails HR and MR

There were only chronic data for 1 species — a fish. There were only acute toxicity data for 23 species belonging to 3 different taxonomic groups (fish, crustacea, insecta).

Therefore only a LR (ECL) TV could be derived. An AF of 200 was used because the lowest value was chronic.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 200 |
| | = | 33.4 µg/L ÷ 200 |
| | = | 0.15 |
| | ≈ | 0.2 µg/L |

## Marine

There were no chronic data but there were acute toxicity data for 2 species, which belonged to 2 taxonomic groups (fish, mollusca).

Therefore only a LR (ECL) TV could be derived.

| | | |
|---|---|---|
| LR (ECL) TV | = | lowest value ÷ 1000 |
| | = | 1800 µg/L ÷ 1000 |
| | = | 1.8 µg/L |

# Tebuthiuron [CAS No. 34014-18-1]

## Freshwater

### HR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 26000 | 9300 | 21800 | 21.52 | 56 | 310 |

| | | |
|---|---|---|
| HC1 50% | = | 0.151 |
| HC5 50% | = | 2.20 |
| HC10 50% | = | 18.79 |
| HC20 50% | = | 160.6 |

HR TV = 2.20 = 2.2 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 0.0151 | 2.2 | 18.79 | 160.6 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.02 | 2.2 | 20 | 160 µg/L |

## Marine

### Fails HR and MR

There was a chronic datum for 1 species — a diatom. There was an acute datum for 1 species — a crustacean.

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV = 2.20 = 2.2 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 0.0151 | 2.2 | 18.79 | 160.6 |

These were rounded off to

| | | | |
|---|---|---|---|
| 0.02 | 2.2 | 20 | 160 µg/L |

# Acrolein [CAS No. 107-02-8]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 7 species belonging to three taxonomic groups (fish, crustacea and amphibia) none of which included alga.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest acute value ÷ 1000
= 7 µg/L ÷ 1000
= 0.007 µg/L

This was rounded to 0.01 µg/L

LR (ECL) TV = 0.01µg/L

## Marine

There were only marine toxicity data for 4 species that belonged to 2 taxonomic groups (fish and crustacea).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest acute value ÷ 1000
= 100 µg/L ÷ 1000
= 0.1 µg/L

# Bromacil [CAS No. 314-40-9]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species, a fish. There were no chronic toxicity data.

Therefore only a LR (ECL) TV could be derived.
LR (ECL) TV = lowest value ÷ 1000
= 182000 µg/L ÷ 1000
= 182 µg/L

Which was rounded off to 180 µg/L

LR (ECL) TV = 180 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 180 µg/L

# Glyphosate [CAS No. 1071-83-6]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 3 321 | 149.87 | 91 959.6 | 130 000 | 184 721.21 | 97 918.33 |
| 100 | 328.88 | 116 259.46 | 26 700 | 106 124.67 | 97 000 |
| 3000 | 51 029.40 | 34 945.15 | 641 232.41 | 77 722.09 | 116 017.81 |

HC1 50% = 3726
HC5 50% = 12210
HC10 50% = 20781
HC20 50% = 36760

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV (HC1 50%) = 3726 ÷ 10 = 372.6 = 370 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because the HC5 50% TV was too close to the acute toxicity data (i.e. it did not provide adequate protection).

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 372.6 | 1221 | 2078.1 | 3676 |

These were rounded off to

370 1200 2000 3600 µg/L

## Marine

### Fails HR and MR

There were no toxicity data for marine organisms. Therefore, the freshwater TV was adopted for marine waters.

LR TV (HC1 50%) = 370 µg/L

The other levels of protection are:

| **99%** | **95%** | **90%** | **80%** |
|---|---|---|---|
| 372.6 | 1221 | 2078.1 | 3676 |

These were rounded off to

370 1200 2000 3600 µg/L

# Imazethapyr [CAS No.

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 3 species, all of which were a fish

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 240000 µg/L ÷ 1000
= 240 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 240 µg/L

# Ioxynil [CAS No. 1689-83-4]

## Freshwater

### Fails HR and MR

There were only acute toxicity data for 1 species.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 350 µg/L ÷ 1000
= 0.35 µg/L

This was rounded to 0.4 µg/L

LR (ECL) TV = 0.4 µg/L

## Marine

There were no toxicity data for marine species. Therefore, the freshwater LR (ECL) TV was adopted for marine waters.

LR (ECL) TV = 0.4 µg/L

# Metolachlor [CAS No. 51218-45-2]

## Freshwater

### Fails HR and MR

There were acute toxicity data for 2 species, a fish and a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 20.6 µg/L ÷ 1000
= 0.0206 µg/L

This was rounded down to 0.02 µg/L

ThereforeLR (ECL) TV = 0.02 µg/L

## Marine

There were no toxicity data for marine species. Therefore the freshwater LR (ECL) TV was adopted for marine waters.

Therefore LR (ECL) TV = 0.02 µg/L

# Trifluralin [CAS No. 1582-09-8]

## Freshwater

### Fails HR

### MR Calculations

The data used to derive the TV were:

| | | | | | |
|---|---|---|---|---|---|
| 250 | 261.45 | 812.40 | 3633.18 | 270 | 577.55 |
| 47.48 | 75 | 41.42 | 105 | 600 | 60 |
| 2000 | 60 | 250 | 193 | 387.30 | 80 |
| 50 | 1734.12 | 3509.99 | 50000 | 210.71 | 15947.75 |
| 636.40 | 1000 | 3385.16 | 35000 | 30000 | 30000 |
| 8000 | 130.38 | | | | |

**NOTE:** The above data contained values that were greater than the twice the aqueous solubility. These data were removed and the TV recalculated below.

| | | | | | |
|---|---|---|---|---|---|
| 250 | 261.45 | 812.40 | 1100 | 270 | 577.55 |
| 47.48 | 75 | 41.42 | 105 | 600 | 60 |
| 2000 | 60 | 250 | 193 | 387.3 | 80 |
| 50 | 1734.12 | 3509.99 | 210.71 | 636.4 | 1000 |
| 3385.16 | 8000 | 130.38 | | | |

HC1 50% = 26.22
HC5 50% = 44.13
HC10 50% = 60.69
HC20 50% = 93.60

**NOTE:** This chemical has a log Kow value greater than 4, therefore it has the potential to bioaccumulate. To account for this the HC1 50% value was used to calculate the TV. Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR for this chemical.

MR TV (HC1 50%) = 26.22 ÷ 10 = 2.622 = 2.6 µg/L

The HC1 50% was adopted for slight to moderately modified ecosystem protection because trifluralin can bioaccumulate and also because the 95% figure is too close to the acute toxicity figures.

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 2.622 | 4.413 | 6.069 | 9.36 |

These were rounded off to

| | | | |
|---|---|---|---|
| 2.6 | 4.4 | 6 | 9 µg/L |

# Marine
## Fails HR and MR

There were no chronic toxicity data but there were acute toxicity data for 1 species — a crustacean.

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality than this and therefore was adopted for marine waters.

LR TV (HC1 50%) = 2.6 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 2.622 | 4.413 | 6.069 | 9.36 |

These were rounded off to

| | | | |
|---|---|---|---|
| 3 | 4.4 | 6 | 9 µg/L |

# LAS (normalised NOECs)
# Freshwater
## HR Calculations

There is no CAS No. as the term LAS represents a group of chemicals.

The data used to derive the TV for LAS are not in the database. Therefore, the data from the database should not be used to derive any site-specific TVs or to recalculate TVs as more data becomes available. The data used to derive the TV were obtained from the MHSPE (1994) document. These data were all normalised to an alkyl chain length of 11.6 in order for the toxicity data to be consistent. This consisted of chronic toxicity data for 5 species of algae, 2 crustaceans, 1 insect and 5 fish. Therefore the statistical distribution method could be used.

| | | | | | |
|---|---|---|---|---|---|
| 12000 | 3500 | 800 | 15000 | 7700 | 3800 |
| 3200 | 1400 | 2800 | 3400 | 2300 | 870 |
| 3200 | 340 | 250 | | | |

| | | |
|---|---|---|
| HC1 50% | = | 64.05 |
| HC5 50% | = | 278.0 |
| HC10 50% | = | 525.3 |
| HC20 50% | = | 1006 |

HR TV = 278 = 280 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 64.05 | 278 | 525.3 | 1006 |

These were rounded off to

| | | | |
|---|---|---|---|
| 65 | 280 | 520 | 1000 µg/L |

## Marine

The data used to derive the TV for LAS are not in the database. Therefore, the data from the database should not be used to derive any site-specific TVs or to recalculate TVs as more data becomes available. The data used to derive the TV were obtained from the MHSPE (1994) document. These data were all normalised to an alkyl chain length of 11.6 in order for the toxicity data to be consistent.

These data consisted of chronic values for 1 crustacean, 2 molluscs and 1 fish. Therefore only an LR (ECL) TV could be derived. However, the freshwater MR TV was of higher quality and could therefore be adopted as an LR TV. But, the freshwater MR TV value of 280 was much greater than the available marine data. Therefore a marine LR (ECL) TV was calculated. An assessment factor of 200 was used as the lowest toxicity value was chronic.

LR (ECL) TV = 25 ÷ 200
= 0. 125
= 0.1 µg/L

The other levels of protection could not be calculated as the TV was derived using the AF method.

# AES (normalised NOECs)

## Freshwater

### HR Calculations

There is no CAS No. as the term AES represents a group of chemicals.

The data used to derive the TV for LAS are not in the database. Therefore, the data from the database should not be used to derive any site-specific TVs or to recalculate TVs as more data becomes available. The data used to derive the TV were obtained from the MHSPE (1994) document. These data were all normalised to an alkyl chain length of 17 in order for the toxicity data to be consistent. The data consisted of chronic values for 5 species that belonged to 4 taxonomic groups (green alga, fish, protozoa and fish).

| | | | |
|---|---|---|---|
| 2400 | 2400 | 800 | 1600 | 1200 |

HC1 50% = 335.8
HC5 50% = 643.6
HC10 50% = 851.9
HC20 50% = 1129.1

HR TV = 643.6 = 645 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 335.8 | 643.6 | 851.9 | 1129 |

These were rounded off to

340 650 850 1100 µg/L

## Marine
### Fails HR and MR

There were no data for marine organisms. Therefore the freshwater TV was adopted for marine waters.

LR TV = 643.6 = 645 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 335.8 | 643.6 | 851.9 | 1129 |

These were rounded off to

340 650 850 1100 µg/L

# AE (normalised NOECs)
## Freshwater
### HR Calculations

There is no CAS No. as the term AE represents a group of chemicals.

The data used to derive the TV for LAS are not in the database. Therefore, the data from the database should not be used to derive any site-specific TVs or to recalculate TVs as more data becomes available. The data used to derive the TV were obtained from the MHSPE (1994) document. These data were all normalised to an alkyl chain length of 13.3 and so the number of alcohol ethoxylate groups was 8.2 in order for the toxicity data to be consistent. There were chronic data for 13 species that belonged to 7 taxonomic groups (fish, crustacea, blue alga, diatoms, green alga, protozoa, and worms).

| | | | | |
|---|---|---|---|---|
| 1900 | 930 | 8700 | 740 | 1300 |
| 200 | 1300 | 860 | 590 | 1500 |
| 720 | 170 | 170 | | |

HC1 50% = 51.98
HC5 50% = 142.69
HC10 50% = 224.2
HC20 50% = 363.9

HR TV = 142.69 = 143 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 51.98 | 142.69 | 224.2 | 363.9 |

These were rounded off to

| | | | |
|---|---|---|---|
| 50 | 140 | 220 | 360 µg/L |

## Marine
### Fails HR and MR

There were chronic toxicity data for 4 species that belonged to 3 taxonomic groups (fish,. crustacea and mollusca).

Therefore only a LR (ECL) TV could be derived. However, the freshwater TV was of higher quality and was therefore adopted for marine waters.

LR TV = 142.69 = 143 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 51.98 | 142.69 | 224.2 | 363.9 |

These were rounded off to

| | | | |
|---|---|---|---|
| 50 | 140 | 220 | 360 µg/L |

# BP1100X
## Freshwater
### Fails HR and MR

There were no toxicity data for freshwater species. Therefore the marine LR (ECL) TV was adopted for freshwaters.

Therefore LR (ECL) TV = 25 µg/L

## Marine
There were only acute toxicity data for 6 species, 1 fish, 3 crustaceans and 2 molluscs.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 25 000 µg/L ÷ 1000
= 25 µg/L

# Corexit 7664 [CAS No. 12774-30-0]
## Freshwater
### Fails HR and MR

There were only acute toxicity data for 1 species, a fish.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 15800 µg/L ÷ 1000
= 15.8 µg/L

This was rounded off to 16 µg/L.

Therefore LR (ECL) TV = 16 µg/L

## Marine

There were only acute toxicity data for 6 species, which belong to 3 taxonomic groups (fish, crustacea and mollusca).

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1000 µg/L ÷ 1000
= 1 µg/L

# Corexit 8667 [CAS No. 95312-90-6]

## Freshwater

### Fails HR and MR

There were no toxicity data for freshwater species. Therefore the marine LR (ECL) TV was adopted for freshwater species.

Therefore LR (ECL) TV = 1200 µg/L

## Marine

There were only acute toxicity data for 1 species, a crustacean.

Therefore only a LR (ECL) TV could be derived.

LR (ECL) TV = lowest value ÷ 1000
= 1225000 µg/L ÷ 1000
= 1225 µg/L

This was rounded down 1200 µg/L

Therefore LR (ECL) TV = 1200 µg/L

# Corexit 9527 [CAS No. 60617-06-3]

## Freshwater

### Fails HR and MR

There was a toxicity datum for 1 species — a fish.

Therefore only a LR (ECL) TV could be derived. However, the marine water TV was of higher quality than this and therefore it was adopted for freshwaters.

LR TV = 11038 ÷ 10 = 1103.8 = 1100 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 233.3 | 1103.8 | 2177.3 | 4403.7 |

These were rounded off to

230 1100 2200 4400 µg/L

## Marine
### Fails HR
### MR Calculations

There were no chronic data. There were acute toxicity data for 11 species that belonged to 4 taxonomic groups (fish, crustacea, mollusca and brown alga).

The data used to derive the TV were:

| | | | |
|---|---|---|---|
| 34734.97 | 100000 | 169715.20 | 162000 |
| 6023.38 | 733212.11 | 78094.73 | 965489.38 |
| 100000 | 200000 | | |

| | | |
|---|---|---|
| HC1 50% | = | 2333 |
| HC5 50% | = | 11038 |
| HC10 50% | = | 21773 |
| HC20 50% | = | 44037 |

**NOTE:** Because this TV was derived using acute toxicity data it is a MR TV and must be divided by either a default AF of 10 or an ACR. There was no ACR.

MR TV = 11038 ÷ 10 = 1103.8 = 1100 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 233.3 | 1103.8 | 2177.3 | 4403.7 |

These were rounded off to

230 1100 2200 4400 µg/L

# Corexit 9500
## Fresh and Marine waters combined
### Fails HR
### Meets MR

There were no chronic toxicity data. There were acute toxicity data for 15 species that belonged to 5 taxonomic groups (fish, crustacea, mollusca, diatom and brown alga).

However, the data for this chemical arrived extremely late in the derivation process and so they could not be screened (i.e. have their quality assessed). Therefore, even though a MR TV could have been calculated (and this method was used) the TV was classed as a Low reliability LR TV because of the greater uncertainty associated with the toxicity data.

Normally toxicity data based on 24 hour exposure were not used to derive TVs but in this case it was included.

HC1 50% = 140
HC5 50% = 1450
HC10 50% = 3930
HC20 50% = 10720

LR TV = 1450 ÷ 10 = 140 µg/L

The other levels of protection are:

| 99% | 95% | 90% | 80% |
|---|---|---|---|
| 14 | 145 | 393 | 1072 |

These were rounded off to

| | | | |
|---|---|---|---|
| 15 | 150 | 400 | 1100 µg/L |

# References


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