



What is the right value of Q_{10} in pesticide fate modelling?

What value of Q_{10} do we use now?

In 1996, FOCUS suggested that at 10°C, the half life of pesticides would be, on average, 2.2 times longer than the half life at 20°C, i.e. a Q_{10} value of 2.2. This value is currently used as a default in a wide range of modelling techniques including FOCUS Ground Water and FOCUS Surface Water.

Why might we use a different value?

Recently, the Scientific Panel on Plant Health, Plant Protection Products and their Residues (PPPR) answered 3 questions about the Q_{10} value.

1. Is 2.2 the right value?

They said 'no' and suggested that the new default value of Q_{10} should be 2.8.

2. When can you use a different value from the default?

They said that most chemical families are well described by this value of 2.8. However, to dispute the default value, you will need a large number of data sets. At least 5 good quality data sets will be required to justify a small change in Q_{10} . This data requirement is based on the assumption that 2.8 is the true value, and the applicant must provide evidence to the contrary.

3. What temperature range is covered by the default Q_{10} ?

The new default Q_{10} covers the temperature range 0°C – 30°C.

What does this mean for risk assessment?

If this opinion were adopted as law, then extrapolations of the half life at 10°C would be 27% longer than using the current Q_{10} value of 2.2. Furthermore, it will be very difficult to argue away from the Q_{10} of 2.8, even with experimental data.

We advise our clients to continue using the current value of 2.2 until firm guidance comes from a statutory authority. This is because the risk assessment procedures that have been developed have assumed a Q_{10} value of 2.2 as background information. Wholesale change to a value of 2.8 should not take place without consideration of a revision of the modelling scenarios.

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