Groundwater — Pesticides: TDE qualification thresholds

Quantitative TDE qualification criteria | 10 November 2026

1. Purpose and scope

To establish conventional criteria for assessing the presence of pesticide active substances in groundwater or spring water representative of the area proposed for TDE designation. The thresholds are intended to identify low agricultural pressure, not to certify drinking-water suitability or the absolute absence of contaminants. Surface water and irrigation water originating from external catchments require a specific assessment.

2. Approved TDE thresholds

Unit: micrograms per litre (µg/L). Classification is applied separately to each individual active substance and to the sum of the active substances quantified in the TDE analytical panel.

Indicator	Direct TDE qualification	Integrated assessment	TDE exclusion
Individual pesticide	$X < 0.03$	$0.03 \leq X \leq 0.05$	$X > 0.05$
Sum of pesticides	$\Sigma < 0.15$	$0.15 \leq \Sigma \leq 0.25$	$\Sigma > 0.25$

The more restrictive result of the two indicators always takes precedence. Values exactly equal to the thresholds fall within the integrated assessment band.

3. Interpretation of results

• Direct TDE qualification: all individual active substances are below 0.03 µg/L and their sum is below 0.15 µg/L, subject to the overall assessment of the other matrices.

• Integrated assessment: at least one indicator falls within the intermediate band and no indicator exceeds the exclusion threshold. The assessment takes account of the substance detected, reproducibility, hydrogeological conditions, land-use history, soil and available bioindicators.

• Exclusion: an active substance above 0.05 µg/L or a sum above 0.25 µg/L makes the water non-compliant with the TDE pesticide criterion, unless a possible analytical or sampling error is established.

• Concentrations < LOQ: report them as such. Do not automatically assign zero to non-quantifiable values; define and disclose a consistent method for calculating the sum.

4. Metabolites: separate section

Pesticide metabolites selected in the TDE document “Water – Pesticide Metabolites” are not subject to the automatic thresholds given above: each quantifiable detection requires a reasoned case-by-case assessment. This distinction concerns only the conventional TDE classification. For regulatory compliance, relevant metabolites and other substances covered by the applicable standards must nevertheless be considered.

5. Origin and significance of the thresholds

Directive 2006/118/EC (Annex I) sets general groundwater quality standards of 0.1 µg/L for an individual pesticide and 0.5 µg/L for the total, including relevant metabolites as required by the applicable legislation. SNPA Report 41/2024 uses 30% of the standard as a lower descriptive band (“below the limits”); this is not an additional legal threshold.

TDE conventionally adopts 30% of the general values as the direct acceptance threshold (0.03 and 0.15 µg/L), and 50% as the threshold above which exclusion applies (0.05 and 0.25 µg/L). These are project-specific choices, not regulatory limits or validated ecotoxicological thresholds.

6. Implementation notes

The thresholds are preliminary in terms of environmental validation and may be reviewed in light of monitoring campaign results. The laboratory must use methods validated for water, with LOQs appropriate to the direct qualification thresholds; the sampling plan is governed by operating procedure TDE-C02.

Where substances are subject to more stringent specific legal standards, legislation always takes precedence. Any use for irrigation of water that is not representative of the local catchment must be assessed in relation to the crop and the actual production practices.

7. Bibliographic and regulatory references

• Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006, Annex I, groundwater quality standards.

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0118

• SNPA (2024). National report on pesticides in water. 2021 data. SNPA Report No. 41/2024, ISBN 978-88-448-1209-6. https://www.snpambiente.it/wp-content/uploads/2024/04/Rapporto_41_2024_dati-2021.pdf

• ISPRA, Environmental Indicators: Water quality – Pesticide pollution (updated 30 June 2024). https://indicatoriambientali.isprambiente.it/it/sostanze-o-agenti-chimici/qualita-delle-acque-inquinamento-da-pesticidi

Regulatory clarification. The TDE thresholds of 0.03/0.05 µg/L per substance and 0.15/0.25 µg/L for the sum apply to active substances under the TDE qualification criterion. Legal assessment of groundwater chemical status also includes relevant metabolites and associated transformation products: their case-by-case TDE assessment does not exempt them from regulatory standards.