



To  
State Secretary of Housing,  
Spatial planning and the Environment,  
P.O. Box 30945  
2500 GX The Hague

TCB S51(2005)

The Hague, 29 september 2005

Re: Recommendations for groundwater threshold values for the Water Framework Directive

Dear Mr State Secretary,

In your letter of 25 February 2005 (ref. BWL/2004107324), you ask the Technical Committee on Soil Protection (TCB) for recommendations on which environmental considerations should be taken into account in setting threshold values for groundwater. Threshold values for groundwater are necessary for the implementation of the Water Framework Directive (WFD) and the proposed Groundwater Directive (GWD). In response to various developments related to the draft GWD, you modified your original request on a number of points in your letter of 27 June 2005 (ref. BWL/2005124073).

A summary of the TCB's findings is presented below. They are discussed in more detail in the report 'Advise threshold values for the Water Framework Directive' (A37, 2005, in Dutch). The TCB indicates a range of environmental standards which it considers to be suitable threshold values. It also proposes a number of options whose practical applicability can be assessed in the course of the policymaking process.

In determining the level of the threshold values, the TCB was guided by the following principles:

- Given the scale, the TCB considers the threshold values a highly suitable frame of reference for the policy on large-scale diffuse groundwater pollution. Current Dutch soil decontamination policy can continue to apply to local point-source pollution and regional groundwater pollution where the intervention value for groundwater has been exceeded.
- Threshold values have a function when it comes to protecting both groundwater itself and surface water fed by groundwater. The latter function is particularly important in areas where shallow groundwater is in contact with surface water. In the interest of creating the simplest and most user-friendly system of standards, the TCB is in favour of a threshold value which can cover both protection objectives.
- The TCB believes that threshold values should be based on existing risk levels. The Dutch system of standards is already very extensive and complicated. With this in mind, the TCB sees no sense in adding new risk levels.
- To facilitate management, the TCB supports national threshold values wherever possible and region-specific modifications wherever necessary. As for anthropogenic substances, the TCB

sees no reason for a region-specific approach and would prefer to see national threshold values used in all cases.

- The TCB believes it is impractical to use the natural background concentration as the threshold value. This would lead to an undesirable situation in which the threshold values were repeatedly exceeded, even though environmental and drinking water standards were not seriously affected.

In keeping with current Dutch groundwater quality management, the TCB regards the target values as a suitable standard. Target values indicate the quality level for which the effects are negligible. They form the frame of reference by which the government can determine whether the source-directed policy is sufficiently effective. Another option is to follow the example of surface water quality management. This uses the Maximum Permissible Concentration (MPC) based on ecotoxicological data, as a minimum quality level, while the final, long-term objective is embodied by target values. A similar approach could be followed for groundwater. The TCB finds the intervention value unsuitable because this standard tends to be oriented towards local groundwater pollution. Threshold values apply to bodies of groundwater or larger units. Because groundwater pollution is not easy to detect, changes in groundwater quality occur very slowly and the decontamination of polluted groundwater can often only be achieved through major groundwater purification, the TCB is opposed to using intervention values as threshold values on this scale. To protect ecosystems and strategic groundwater reserves from this type of large-scale pollution, action should be taken at an earlier stage.

#### **Man-made synthetic substances**

For many substances of anthropogenic origin, the MPC based on human toxicology (the basis for the intervention value) is stricter than the MPC based on ecological toxicology. Since the TCB regards the intervention values as unsuitable, the obvious choice would be to use the present target values as threshold values for these substances.

#### **Substances which may both occur naturally and as a result of human activities**

For these substances the TCB sees the following options:

- Use of the added risk method. This involves calculating the threshold values by adding an ecotoxicologically based anthropogenic addition to the natural background concentration. In that case measured values of the natural background concentration should be used. For pragmatic reasons, the geometric average (or 50 percentile) of measured concentrations in groundwater that has not been over-contaminated could be used. In the case of metals, the concentration attributable to the negligible anthropogenic addition is miniscule compared to the natural background concentration. Since the TCB believes the natural background concentration is an unsuitable threshold value, a better choice would be to use a maximum anthropogenic addition.
- If, in the course of formulating policy, it becomes clear that the above standards are not practical threshold values, another type of background concentration could also be used – for example the 90 percentile of measurements in groundwater that has not been over-contaminated. In that case, however, it would be inconsistent to apply the added risk method since that would entail factoring in human influence twice.

With respect to geographical scale, the obvious choice is to set threshold values for substances which may both occur naturally and as a result of human activities on a region-by-region basis, given that background concentrations can vary from place to place. For example, threshold values could be set for each body of groundwater. That said, it should be noted that differences can occur within a single body of groundwater. For that reason additional research will need to be done to determine the appropriate scale. Examples of studies in which region-specific background concentrations were derived on different scales and at different depths are available.

Yours sincerely,

A handwritten signature in black ink, consisting of a series of connected loops and a final upward stroke.

L.E. Stolker-Nanninga  
Chair, Technical Committee on Soil Protection