

Non-treatment barriers: End-use and on-site controls

Information sheet – Recycled water

Background

The Australian Guidelines for Water Recycling (AGWR) (2006) recognise that safe recycled water can be produced by wastewater treatment or by a combination of treatment and non-treatment barriers. Non-treatment barriers (NTB) function by reducing the exposure of hazards in recycled water to the end user; these include such practices as restricting public access when irrigating sports fields or drip irrigation of crops. The AGWR provides indicative log reduction values (LRV) for non-treatment barriers.

When onsite controls are used to contribute to the total LRV of the recycled water scheme, it is important to consider how they are applied to reduce exposure and to implement monitoring to ensure ongoing effectiveness.

Considerations when applying non treatment barriers

Understanding how the NTB achieves the exposure reduction is useful to determine if it can be applied to the site and to claim a LRV for the scheme. Generally, exposure reduction is achieved by allowing the recycled water to dry prior to contact or by restricting human contact of recycled water. Some examples of NTB and the associated exposure reductions are shown in Table 1. For further details refer to Information Sheet: Calculating Log Reduction Values.

Therefore to claim a LRV for a non-treatment barrier, utilities need to provide evidence of how the NTB will be implemented to achieve the reduction in recycled water exposure. For example, if public access is restricted during irrigation, then inaccessible fencing should be installed or irrigation schedules should reflect times when it is not foreseeable that the public would use the site. Due to the lack of scientific data surrounding LRVs for non-agricultural irrigation a maximum of 3 LRVs attributed to NTB can be claimed.

Site specific conditions need to be considered when applying NTB. For example, withholding periods rely on providing adequate time for drying prior to exposure to the public. In winter or in areas of high humidity this may take many hours more than the suggested 1-4 hours (AGWR, 2006).

NTB should be supported by other measures such as signage and education.

Table 1 Common end uses controls and considerations

End use control	LRV	Exposure reduction	Considerations
Subs surface irrigation	5-6	RC	<ul style="list-style-type: none">• Application rate• Irrigation equipment
Withholding periods for irrigation of parks/sports grounds (1-4 hours)	1	D	<ul style="list-style-type: none">• Humidity• Temperature• Timing

Spray drift control	1	RC	<ul style="list-style-type: none"> • Wind • Drop size • Irrigation equipment
No public access during irrigation	2	RC	<ul style="list-style-type: none"> • Fencing • Access • Timing
Buffer zones (25-30 m)	1	RC	<ul style="list-style-type: none"> • Vegetation • Access

D = drying, RC = restrict contact

Operational monitoring

As NTB can be applied at multiple sites and away from the usual focus of operational monitoring at treatment plants, there can be the tendency to “set and forget” these controls. The effectiveness of any barrier needs to be periodically monitored, it is important that barriers and site specific monitoring schedules are documented and implemented. An example of a schedule is provided in Table 2.

Table 2: Common end use control monitoring

End use control	Monitoring
Subsurface irrigation	Visual inspections
Withholding periods for irrigation of parks/sports grounds (1–4 hours)	Visual inspections and moisture sensors
Spray drift control	Wind meter
No public access during irrigation	Visual inspections
Buffer zones (25-30 m)	Visual inspections

Third parties and user agreements

If NTB are situated on a site that is not under the direct control of the recycled water supplier, the third party must be aware that the safe use of the water is reliant on the effectiveness of the NTB. Responsibilities for the installation, operation, maintenance and monitoring of these barriers should be clearly documented in a user agreement and periodically checked or audited by the utility. For further details refer to Information sheet: User agreements.

References

Australian Guidelines for Water Recycling (2006)

For more information

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