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Risk and Regulation in Environmental Toxicology:Application to Cyanobacterial Toxins

Australian Drinking Water Guidelines

- Framework for the management of drinking water quality
- Hazard identification and risk assessment
- A hazard has the potential to cause harm
- A risk is the likelihood of causing harm

Why are cyanobacteria are a hazard in drinking water?

- They have the potential to cause harm
- Known to cause livestock poisoning
- Known to cause human poisoning
- Suspected to contain carcinogens

What is the risk from cyanobacteria?

- Risk assessment a key part of Australian Drinking Water Guidelines
- Can also be applied to source waters
- Re-used waters
- Wastewater

What is the risk? Qualitative assessment

- Likelihood, observed occurrence, factors known to increase occurrence
- Consequences, level of harm observed or predicted
- Can be considered as an economic risk or a health risk

Quantitative assessment

- Establishment of safety criteria for risk
- Monitoring of contaminant levels
- Comparison with accepted criteria
- Acceptable level of risk

Guideline values

- Safe concentrations of potentially harmful agents in potable water (or recreational, irrigation, industrial waters)
- Agents with a safe threshold, most cyanobacterial toxins, pesticides, heavy metals
- Agents with no threshold level, carcinogens

‘Grey areas’

- Regulations or guidelines
- Monitoring or not, costs
- Perception of risk –balance of cost of mitigation to perceived benefit
- Reporting of ‘exceedences’
- Public impacts, industry impacts

Thank you

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