Closure of recreational lakes because of toxic cyanobacteria: risk communication, risk perception, enforcement and economic impacts

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Closure of recreational lakes as a public health response to toxic cyanobacteria: risk perception and risk communication

DISCUSSION TOPICS

How are the risks perceived?

How are the risks communicated when decisions are made to close lakes?

What are the management implications that arise from ineffective risk communication?
September 2008: bloom of *Nodularia spumigena* identified at a recreational lake in southeast Queensland 2008/09

Toxic bloom: nodularin
RISK PERCEPTION

St Johns River, NE Florida
Cyanobacteria bloom, recreational lake, southeast Queensland 2008/09

Management taskforce: Logan Council advised by Queensland Health

Cable ski park proprietor agreed to voluntary closure of his business

Closed for three months

Treated with Phoslock

Estimated cost: $300,000 (“my Ferrari”)
Cyanobacteria bloom, Lake Burley Griffin, Canberra, February – June 2009

Partial and full closures
Cancellation of ACT State wakeboard title meet
World Rowing Championships training moved to Sydney. Cost to AIS: $5,000 per day
ACT Water Police enforced closure
Guidelines for closure of recreational waters due to cyanobacteria / cyanotoxins

NHMRC: *Potential* risk reduction measures: “…curtailing recreation during blooms…”

WHO: Level 3 guideline (High probability of adverse health effects): “Immediate action to control scum contact; possible prohibition of swimming and other water contact activities”

Oregon: “Under extreme conditions, or if evidence exists of illness, the appropriate jurisdiction for a waterbody can invoke an official closure”

France: Level 3: presence of scums → All activities are prohibited

Germany: Level 3: >100μg/L MCs: “… temporary closure recommended”
Madison, Wisconsin: golf course pond,  
July 2002

Swam in golf course pond with 4 friends  
horseplay, forced immersion

24 hours later: severe G-I illness – abdominal cramping, vomiting, diarrhoea

36 hrs: collapsed and died

Dane Rogers
RISK COMMUNICATION

EXPOSURE ROUTES

1. Parenteral: not relevant
2. Inhalational: ???
3. Oral: unequivocally hazardous
4. Dermal: negligible risk of systemic intoxication

(±/− Lyngbya-related toxins)
RISK COMMUNICATION

QUESTIONS

1. Should we devise recommendations and protocols to direct closure of recreational waterbodies? Contrasting example of *Naegleria fowleri*?

2. Irrespective of answers to 1. above, should we offer more by way of explanation as to why recreational access is restricted because of cyanobacteria?

3. Should the risk of systemic intoxication be the yardstick by which decisions to close a lake are measured? Or not?

- How the mass media operates
- Framing the issue for the media
- Newsworthiness
- How health scares work
RISK AMELIORATION

Long-term nutrient input reduction program

Riparian buffer zones

Closed catchments

Support for targeted toxicology and epidemiological research
Outreach program related to decisions to restrict access:

DISCUSSION TOPICS:

- Why we are concerned about cyanobacteria
- What causes the problem (NUTRIENTS)
- How it can affect you (Oral exposure)
INEFFECTIVE RISK COMMUNICATION

- Warning fatigue
- Suspicion of expert incompetence. The media love to present conflicts ("The Emperor’s new clothes")
- Litigation – perception of “arbitrary and capricious” decision-making
RISK PERCEPTION

Antihistamine prophylaxis prior to recreational water activities

High demand for access to recreational water
RISK PERCEPTION

Lake Coolmunda, SE Queensland
CONCLUSIONS

- Community opposition to public health interventions
- Mass media frame uncertainty as disputes
- Outreach and information specifically for interventions to restrict recreational access
- MORE RESEARCH