

# Water Quality in Iowa – A State Toxicologist's Perspective



Presentation for Iowa's Water Quality: A Public Health  
Perspective

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# What is IDPH Most Concerned About?

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- Exposures that can cause adverse health impacts
  - A viable exposure route (ingestion, dermal)
  - Sufficiently high amount of toxin to overwhelm body's defense mechanisms
  
- There is a difference between exposures in drinking water and recreational water
  - Drinking water: ingestion
  - Recreational water: dermal, incidental ingestion

# Misunderstanding in Recreational Exposure

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- “Iowa couple hang up canoe over nitrate fears” – Des Moines Register, August 6, 2016
  - Concerned about exposure to nitrates in Raccoon River when canoeing
  - Decided not to canoe
  - Nitrate is only a concern for ingestion. Even swimming in high nitrate rivers would not cause adverse health impacts.
  - Free to canoe without fears from nitrates



# State Toxicologist Perspective on Drinking Water Concerns

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- ❑ If you receive water from a public water supply there is no need for much concern of your health being adversely impacted from your tap water
  - Water is tested and needs to meet EPA MCLs
  - MCLs are developed by reviewing toxicological information and are generally set below levels that can cause health impacts if exposed over a lifetime.
- ❑ 89% of Iowans are on a public water system - no health concerns.
- ❑ From 1996 to 2015, 83% of Iowa public water supplies have not had monitoring or reporting violations.

# State Toxicologist Perspective on Drinking Water Concerns

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- Private drinking water wells pose the greatest potential for unknown exposures.
  - Testing is not required, but is recommended.
  - Testing is normally limited to nitrates and bacteria, arsenic can be included. Possibility of other exposures.
  - A private well owner can protect themselves by taking advantage of Grants to Counties money, applying appropriate treatment technology
- Water policy potential
  - Expand public water supplies
  - Some counties require connection to rural water when possible

# State Toxicologist Perspective on Recreational Water

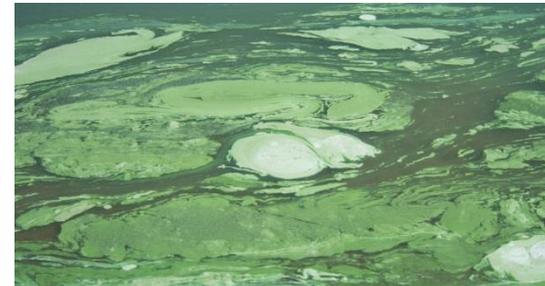
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- Overall water quality in streams and lakes has remained about the same for last 20 years.
  - Good news – not getting worse
  - Bad news – not getting better
  - Iowa ranks 25th in U.S. in terms of number of impaired waters.
  - States that are generally believed to have better water quality than Iowa—including Wisconsin, Minnesota, Oregon, and Washington—have far more impaired waters than Iowa likely due to larger budgets for water quality monitoring and possibly more stringent water quality criteria.

# State Toxicologist Perspective on Recreational Water

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- ❑ The great outdoors always poses some risk - bacteria, naturally occurring toxins.
  - Due to uncertainty, risk from natural environment higher than in monitored, controlled environment
- ❑ Dermal and incidental ingestion are exposure concerns.
- ❑ Monitoring of algal toxins only completed at state parks and large reservoirs.



# State Toxicologist Perspective on Several Contaminants

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## □ E-coli (bacteria):

- Represents 50% of water quality violations in public water supplies
- Normally very short term out of compliance in public water supplies
- Part of the natural environment – a real risk

## □ Nitrates:

- People have greater exposure to nitrates in foods compared to water. Processed meats, vegetables amount to 80% of nitrate exposure
- No case of methemoglobinemia in infant in Iowa in over 30 years.
- Since 2010 there has been between one and six cases of methemoglobinemia reported to IDPH each year – none of these reported cases were associated with exposure to elevated nitrate or nitrite in drinking water

# State Toxicologist Perspective on Several Contaminants

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## □ Arsenic:

- Somewhat uncertain as to overall exposure in Iowa - need for more monitoring.
- Arsenic poisoning cases reported to IDPH each year since 2011 range from no cases to 3 cases.
- These cases of arsenic poisoning were due exposure to organic forms of arsenic, most likely due to large seafood consumption, not from arsenic in drinking water

## □ Lead:

- The greatest risk of exposure in children is due to old lead-based paints in homes.
- No case of elevated blood-lead in children due to drinking water exposure in Iowa.

# State Toxicologist Perspective on Water Quality Policy

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- Exposure and Risk
  - Policy should reflect areas of greatest exposure and risk to human health
  
- Continued Monitoring and Toxicological Evaluation
  - Monitoring of contaminants when we need more information (ex. nutrient reduction in Iowa)
  - More studies in areas of uncertainty (ex. nitrates and cancer)
  
- Improved Communication of Actual Risks
  - Increased knowledge of exposure, dose-response, and regulatory levels

# Thank You! Questions?



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