Utah Poison Control Center
Update
Water Quality Board
December 2019

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EXECUTIVE DIRECTOR
UTAH POISON CONTROL CENTER
OUTLINE

• Poison exposures in Utah
• Environmental exposures
  – Information
  – Other
  – HAB
• HAB related cases in detail
OUR MISSION

To prevent and minimize adverse health effects from a poison exposure through education service and research.
THE SERVICE

• 24/7 staffed with specialists in poison information
  – RPh and RN with additional training in toxicology
• Service to public, health professionals, public health
• Triage and provide first aid instructions
• Cases documented in electronic database with near real time surveillance
• Statewide service administratively housed in College of Pharmacy
POISONINGS IN UTAH

- > 40,000 cases/year
  - ~ 93% exposures (2% animals)
  - ~7% information
- All 29 counties
- ~ 58% involve children < 6 years
- 75% managed on-site
- < 1% major/fatal outcome
- Highest reporting per population
ENVIRONMENTAL EXPOSURES

• Passive, non-occupational
• Contamination of air, water or soil
• ~ 5% of all exposures
• Most common substance categories
  – Fumes, gases, vapors
  – Algal blooms
  – Contaminated water
  – Pesticides
ENVIRONMENTAL INFORMATION INQUIRIES

• < 10% of all information inquiries
• Top 5 environmental inquiry categories
  – Water purity/contamination
  – Pesticides
  – General toxicity of chemicals in environment
  – Safe disposal of chemicals
  – Carbon monoxide
CONTAMINATED WATER

• Previously ~ 50 cases/year
• 2019 – 1st 11 months = 475
  – Sandy City Fluoride
• Common sources
  – Storage/irrigation/secondary water
  – Streams/rivers/reservoir
  – Toilet
## Algal Bloom Cases

<table>
<thead>
<tr>
<th>Algal Bloom Cases</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human</td>
<td>534</td>
<td>133</td>
<td>224</td>
<td>288</td>
</tr>
<tr>
<td>Animal</td>
<td>34</td>
<td>8</td>
<td>23</td>
<td>34</td>
</tr>
<tr>
<td>Information</td>
<td>109</td>
<td>32</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>677</td>
<td>173</td>
<td>271</td>
<td>342</td>
</tr>
</tbody>
</table>
## UTAH WATER BODIES

<table>
<thead>
<tr>
<th>Water Body</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah Lake/Jordan River</td>
<td>127</td>
<td>67</td>
</tr>
<tr>
<td>Pineview Reservoir</td>
<td>77</td>
<td>34</td>
</tr>
<tr>
<td>Scofield Reservoir</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>Yuba Lake</td>
<td></td>
<td>124</td>
</tr>
<tr>
<td>Blackridge Reservoir</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Mantua Reservoir</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Payson</td>
<td></td>
<td>5</td>
</tr>
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## OTHER WATER BODIES 2019

<table>
<thead>
<tr>
<th>Water Body</th>
<th># Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stansbury Lake</td>
<td>4</td>
</tr>
<tr>
<td>Otter Creek, Mantua Reservoir, Deer Creek Reservoir, Piute Reservoir</td>
<td>2</td>
</tr>
<tr>
<td>Quail Lake, Provo River, Bear Lake, Strawberry Reservoir, Rockport Reservoir</td>
<td>1</td>
</tr>
</tbody>
</table>
2019 Harmful Algal Bloom (Cyanobacteria) Update
Data through 11/04/19 13:59:59

The Utah Poison Control Center (UPCC) is currently responding to calls related to harmful algal blooms (cyanobacteria) in Utah. Below is the status of cases handled by UPCC specialists in poison information (pharmacists and nurses) and poison information providers (pharmacy students):

<table>
<thead>
<tr>
<th>Harmful Algal Bloom cases*</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov 1-d</th>
<th>To Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human**</td>
<td>5</td>
<td>57</td>
<td>206</td>
<td>55</td>
<td>15</td>
<td>3</td>
<td>342</td>
</tr>
<tr>
<td>Animal***</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Information</td>
<td>1</td>
<td>3</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regular PCC cases</th>
<th>3563</th>
<th>4070</th>
<th>4167</th>
<th>3814</th>
<th>3895</th>
<th>484</th>
<th>19993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human**</td>
<td>3236</td>
<td>3650</td>
<td>3716</td>
<td>3382</td>
<td>3506</td>
<td>426</td>
<td>17916</td>
</tr>
<tr>
<td>Animal***</td>
<td>96</td>
<td>119</td>
<td>117</td>
<td>126</td>
<td>113</td>
<td>20</td>
<td>591</td>
</tr>
<tr>
<td>Information</td>
<td>231</td>
<td>301</td>
<td>334</td>
<td>306</td>
<td>276</td>
<td>38</td>
<td>1484</td>
</tr>
</tbody>
</table>

| Total Case Volume           | 3569 | 4127 | 4373   | 3869 | 3910| 487 | 20335 |

* Caller location: Utah: Box Elder, Cache, Davis, Duchesne, Juab, Morgan, Piute, Salt Lake, Sanpete, Sevier, Summit, Tooele, Utah, Washington, Weber States: Kansas, Idaho

** Adverse effects noted in approximately 29%. Most common are GI (abdominal pain, nausea, diarrhea, vomiting); dizziness, skin irritation

*** Reported animal species: dog, cat


Current Status
- Trained Pharmacists, nurses, and pharmacy students are available 24/7 to consult on possible exposures
- UPCC website includes information and links to UDEQ website
- UPCC has responded to requests from media including; (none to this point)
LOCATION SUMMARY

• Specific as possible
  – Zipcode
  – Specific address

• Utah Lake map
  – Specific marina/beach
  – quadrant
EXPOSURE RELATED ACTIVITY
UTAH LAKE

- Boating
- Swimming/diving
- Irrigation (2016)
- Fishing (2016-2017)
- Playing at beach (2016)
UPCC ROLE IN HAB RESPONSE

- Planning
- Communication
  - Fact sheet
  - Signage
- Response
  - Triage, assess, first-aid
  - Messaging
- Reporting
UPCC REPORTS

• Large response from public with concerns
  – Triage, assessment, recommendations, follow-up
  – Tracked location of exposure and recreation activity

• Adverse effects reported in ~ 29%
  – Signal database
  – Not causal - no biologic confirmation
  – Reported through OHHABS

• Importance of data
  – Track concerns
  – Understand public health implications
ONE HEALTH HARMFUL ALGAL BLOOM SYSTEM (OHABS)

- Established by CDC in 2014
- Voluntary reporting system for state public health
- Goal
  - Support understanding HAB
  - Prevent HAB-associated illness
- Recognizes connection: human/animal/environment
- Suspect, probable or confirmed human/animal cases
- UDOH trained UPCC to input human/animal cases
OHHAABS DATA

• Exposure/illness timing
• Exposure activity and duration
• Signs/symptoms
• Medical care
• Health history
• Laboratory testing
<table>
<thead>
<tr>
<th>Year</th>
<th>Water Body</th>
<th>Human</th>
<th>Animal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>Utah Lake</td>
<td>199</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Scofield Reservoir</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Big East Lake</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>Utah Lake</td>
<td>48</td>
<td>4</td>
</tr>
<tr>
<td>2018</td>
<td>Utah Lake</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>Utah Lake</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Blackridge Reservoir</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Yuba Lake</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>323</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>
CDC OHHABS SURVEY

- Seeking additional exposure related information
  - Appearance of water
  - Symptoms and time to onset
- Reason for PCC call/ healthcare treatment
- Health messaging
  - Hear or read warnings
  - Communication messages
  - Prevention methods
Use of a Regional Poison Control Center to Track Human and Animal Illnesses Linked to a Harmful Algal Bloom

Cindy Burnett, Kaitlyn Brown, Heather Bennett, Barbara J. Crouch, Nathan LaCross
1Utah Department of Health, 2Utah Poison Control Center

BACKGROUND

Harmful Algal Blooms (HABs)
- HABs are caused by the rapid growth of cyanobacteria (a.k.a. blue-green algae).
- Cyanobacteria produce cyanotoxins which can cause a variety of health effects in humans and animals.
- Humans and animals are exposed to the toxins by ingestion, inhalation, or direct skin contact.
- Concentrations usually range from low, the nervous system, and the skin. Symptoms range from mild to severe and include: dizziness, and gastrointestinal, respiratory, and nervous system symptoms. Liver, kidney, brain, and respiratory problems can occur.

Harmful Algal Blooms – Utah Lake, July 2016
- Utah Lake is 24 miles long and (2 miles across (360,000 acres). It is the third largest Great Basin lake water area, east of the Mississippi River. The average depth is 3 meters.
- It is estimated that over 285,000 people visit the lake each year, most during the summer months (July–September).
- Popular activities of the lake include: swimming, fishing, boating, water skiing, and canoeing. The lake is also used for recreation and waterfowl hunting.
- In July 2016, a large HAB event occurred. Maximum cell counts were ≥ 10 million from surface samples and ≥ 1 million from integrated samples. Microcystin levels were low overall (≤ 10 μg/L). However, a reinfeetated surface zone sample was 688 μg/L.
- The media reported the HAB on July 5th, 2016 and the Utah Poison Control Center received its first call on July 6th. The decision to reach the public was made a few days later with a large of phone calls from concerned citizens who were exposed to the bloom.

In an effort to determine the health impact of the HAB on humans and animal health, the Utah Department of Health (UDOH) partnered with the UPCC to document reported illnesses.

RESULTS

- Between July 5 and August 31, 2016, the UPCC fielded 644 calls related to the HAB, including calls requesting information about potential exposures.
- A total of 189 human and 13 animal potentially HAB-associated illnesses were identified and entered into IDHAMS.
- The median age of human cases was 20 years (range: 1-70 years).

Human Cases

- Demographics
  - Gender: Female 80 (44%)
  - Age: ≤ 19 years: 91 (41%)
  - Health Outcomes
    - Number: 32 (16%)
    - Per Cent: 8 (4%)
  - Health care provider visit
    - Number: 32 (16%)
    - Per Cent: 8 (4%)

Animal Cases

- Type of Animal
  - Dog: 11 (55%)
  - Cat: 1 (5%)
  - Horse: 1 (5%)
  - Unknown: 3 (14%)

Methods

- UDOH granted UPCC access to inpatient of suspected HAB-associated human and animal illnesses directly into the One Health Harmful Algal Bloom System (IDHAMS).
- UPCC reports which met CDC criteria as suspect, probable or confirmed cases were entered into IDHAMS.

Limitations

- Symptoms were self-reported and subjective.
- It is possible that symptoms for some callers were due to causes other than exposure to the HAB.
- In some cases, location of exposure could not be ascertained. Therefore it is possible that some reported cases were not exposed to the HAB.

Conclusions

- The UPCC documented 189 cases of reported human illness and 13 cases of animal illness associated with a HAB event in the summer of 2016.
- Without the assistance of the UPCC, it would not have been possible to identify and document the large number of illnesses to humans and animals that were reported following the HAB.
- Understanding the impact of the HAB on the community will help inform and provide guidance for future HAB response and resource allocation.
SUMMARY

• UPCC able to surge and respond to need
• Many concerned citizens and many potential exposure sites
• Most common complaints were GI, headache, dizziness and skin/eye irritation
• Most exposures could be managed at home
  – Average PCC call ~ 3-5 minutes
  – Avoided unnecessary health care costs