PH Response to a Contaminating Event

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NC PHP&R
PH Preparedness is a Team Sport

Many thanks to the NC DHHS/DPH Occupational and Environmental Epidemiology Branch and Brian Combs, IH in NC DHHS/DPH PHP&R
ASPR = Assistant Sec. for Preparedness and Response, ISAAC = Information Sharing and Analysis Center, OEMS = Office of Emergency Medical Services,
Module 1
The Dan River Coal Ash Event
February, 2014

- Feb 2: DENR notified by Duke Energy of release
- Feb 4: PH received notification through a variety of channels

Immediate Life Safety Issues:
  - Recreational water use
  - Agricultural water use
  - Downstream public water

Long(er) term issues:
  - Surface water (wells)
  - Agricultural water use
  - Recreational water use
  - Consumption of fish and shellfish
Steam Electric Plants With Coal Ash Ponds

- Progress Energy facilities
- Duke Energy facilities

13 coal fired plants:
7 Duke Energy
6 Progress Energy
The Coal Ash Management Act

- Requires Duke Energy to survey all drinking water supply wells that are within a half mile and down-gradient of the established compliance boundary.

- Wells:
  - Oct. 2014 830 public and private drinking water wells were identified
  - 347 opted for testing
    - 305 issued Don’t Drink Health Risk Evaluations (HREs)
<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>Analysis Units</th>
<th>Water Quality Standards</th>
<th>Primary</th>
<th>Secondary</th>
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<td>5.78</td>
<td>Temperature</td>
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<td>2/3/2014</td>
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<td>97.7</td>
<td>Dissolved Oxygen Saturation</td>
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<td>15:30</td>
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<td>2/3/2014</td>
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<td>96.5</td>
<td></td>
<td>96.4</td>
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<td>Dissolved metals by ICP-MS</td>
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<tr>
<td>Chromium</td>
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<tr>
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<td>Total recoverable</td>
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Unique PH issues

- Differences between ecological risk assessment and human health risk assessment
  - Animal health
- Testing of samples
  - Lab certification
- Agency domains
  - Benefit of PH IMT
Similarities Between Ecological and Human Health Risk Assessments

0 Similar structure – both types of risk assessments consist of a problem formulation, hazard assessment, exposure assessment and risk characterization.

0 Both can use models to estimate exposure but may differ in what species is being exposed

0 human health risk assessment assess exposure to humans via ingestion, inhalation and dermal contact, while ecological risk assessments may assess exposure to terrestrial animals via ingestion.

0 Both compare measured environmental chemical concentrations against environmental quality guidelines in the problem formulation phase.
Differences Between Ecological and Human Health Risk Assessments

- Human health risk assessment are usually concerned with protecting life of individual human beings.
- Ecological risk assessment are more concerned about populations of organisms (i.e., individual species of fish in a river) or ecological integrity (i.e., will the types of species living in the river change over time?)
- Ecological risk assessment exposure models are like human health risk assessment exposure models, but only consider ingestion pathways to terrestrial animals. The same models also consider foraging range for animals. Foraging range not considered in human health risk assessments.
- Larger reliance on signs of impacts (i.e., toxicity studies, measurements of fish health, aquatic insect surveys, visible abnormalities on animals or discoloration of plants).
“DHHS Division of Public Health recommends that people avoid recreational contact with water and sediment in the Dan River in North Carolina downstream of the Duke Power-Eden spill site. DHHS also recommends that people do not contact submerged or floating coal ash, or ash washed up on the riverbank. Direct contact with the water or sediment may cause skin irritation. Wash skin that has been exposed to the water or sediment with soap and water. The Department will continue to monitor data as it becomes available to identify when health risks are no longer a concern”
"Because the Duke Power-Eden coal ash spill is located in North Carolina's portion of the Dan River, a potential hazard exists immediately downstream of the release. The DHHS Division of Public Health recommends that people not consume any fish or shellfish collected from the Dan River in North Carolina downstream of the Duke Power-Eden spill site. DHHS is working with other agencies to collect fish downstream of the spill and will evaluate the data from fish samples as it becomes available to identify when health risks associated with eating the fish are no longer a concern" (NCDHHS 2014a).

In a July 2014 update, NCDHHS concluded the advisory was still warranted (and it remains in effect at present): “A potential fish and shellfish consumption hazard still exists immediately downstream of the release. DHHS recommends that people not consume any fish or shellfish collected from the Dan River in North Carolina downstream of the Duke Power-Eden spill site. DHHS will evaluate the data from fish samples as it becomes available to identify when health risks associated with eating the fish are no longer a concern"
Where we are now...

- Findings of causation
- Testing of wells: what and how often?
- Environmental Events
CHALLENGES
I expected times like this - but I never thought
they'd be so bad, so long, and so frequent.

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