Environmental Health Experience with an Emphasis on Analysis of Pool and Spa Data

PRESENTED BY
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The Louisville Metro Department of Public Health and Wellness (LMPHW) is located at 400 East Gray Street.

Mission:

- “To protect, preserve, and promote the health, environment, and well-being of the people of Metro Louisville.”

Although the main branch is located downtown LMPHW has 19 satellite sites and Neighborhood Place sites throughout Jefferson County.

- This helps provide services to an estimated 700,000 individuals using an annual budget of $24 million.
There are four divisions of the LMPHW.

- Communicable Disease Prevention Services
  - Activities of this division are directed toward disease surveillance, prevention, detection, management, and control of communicable diseases in the community.

- Community Health Education and Promotion Services
  - This division works to provide citizens with tools so they can make informed decisions about their health and well-being

- Environmental Services

- Personal and Population Health Services
  - Services for this division range from preventative screenings, to immunizations, and dental care.
The three main practicum activities included:

- Gaining experience in the environmental health field through ride-alongs with current health inspectors.
  - This included scores and violations from inspection records as well as results from laboratory analysis of water samples.
- Analyzing pool and spa data for the time period of October 2009 to October 2010.
  - This included scores and violations from inspection records as well as results from laboratory analysis of water samples.
- Performing literature reviews to determine if or how pool scores should be provided to the public.
  - These literature reviews also include a look into the role of Certified Pool Operators (CPOs) in reducing pool violations.
Field Experience

- The first half of the practicum experience was spent with health inspectors to gain field experience.
- Sections of the Environmental Division that were shadowed included:
  - Temporary food establishments
  - Restaurant inspections
  - Pool and Spa inspections
  - Mosquito complaints and monitoring
  - Animal bite cases
  - Mobile home park inspections
  - Sewage system inspections
  - Hotel inspections
  - Tattoo and body piercing establishment inspections
  - Health education
Pool and Spa Background

- Many individuals participate in recreational water activities every year.
  - Just for 2007, approximately 339 million pool visits occurred.
- According to the CDC it is estimated that there are 8.8 million residential and public use swimming pools and 6.6 million hot tubs (spas) in operations in the United States.
- Due to an increase in the rise of recreational water illnesses (RWIs) pool operators are responsible for providing a safe and healthy environment.
- In order to make sure that these operators are adhering to local regulations regarding the operation of pool and spas, health departments perform inspections on a regular basis.
- For LMPHW pools are inspected twice annually (or more if needed), monitored monthly, and sampled weekly for every permitted establishment.
• Inspections results for pools and spas in the Louisville Metro area are input into a system called the Environmental Health Management Information System (EHMIS).

• Queries were preformed in Microsoft Access to obtain files containing violations and scores for the different pool types for October 2009-October 2010.

• The data was “cleaned-up”.
  ○ This involved removing duplicate entries from the database, renumbering some pool types, removing those entries associated with monitoring (type 5), and arranging the entries by types.
Methods

- The Division of Laboratory Services provided the database of water sample results.
- Date range for entries was October 2009 - October 2010 and includes samples taken during inspections, monitoring, and sampling.
- Entries for this database were organized based on the results of laboratory testing.
- These results were then put into a table.
A total of 458 pools were analyzed for October 2009-October 2010. These 458 pools were responsible for 900 inspection score entries and a total of 3,934 violations.
The top five cited violations were:

- 1. Perimeter overflow system, skimmers, inlets, main drain: water level, operating, clean, good repair (#7) = 555 violations
- 2. Bottom, Sidewalls, Deck: Growths, scum build-up, clean, good repair (#6)= 471 violations
- 3. Disinfectant free residual (#24)= 334 violations
- 4. Operator testing frequency, log sheets maintained (#31)= 278 violations
- 5. Turnover rate _____ hrs. (min) (#14)= 251 violations

Critical violations accounted for 53.28% of all violations.

<table>
<thead>
<tr>
<th>Pool Type</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>191- Swimming pools</td>
<td>88.70</td>
</tr>
<tr>
<td>192- Swimming/diving pools</td>
<td>89.02</td>
</tr>
<tr>
<td>193- Diving pool</td>
<td>90.50</td>
</tr>
<tr>
<td>196- Spray pool</td>
<td>95.64</td>
</tr>
<tr>
<td>197- Spa</td>
<td>87.52</td>
</tr>
<tr>
<td>198- Beach</td>
<td>91.50</td>
</tr>
<tr>
<td>199- Wading pool</td>
<td>90.02</td>
</tr>
</tbody>
</table>
For the water sample analysis there were 8,181 entries.

Those samples that had more than 2 total coliform counts per 50mL were considered positive samples.

The positive samples ranged from 4 to 440 reported colonies.

<table>
<thead>
<tr>
<th>Reported Sample Category</th>
<th>Number of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3</td>
<td>7680</td>
</tr>
<tr>
<td>≥4</td>
<td>325</td>
</tr>
<tr>
<td>Confluent growth</td>
<td>94</td>
</tr>
<tr>
<td>TNTC (Too Numerous to Count)</td>
<td>68</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>12</td>
</tr>
<tr>
<td>CNFL</td>
<td>2</td>
</tr>
</tbody>
</table>
Recommendations

- **What can be done with current pool and spa scores?**
  - Placards can be posted at establishments to inform patrons of results from health inspections.
  - Scores can be posted on the Louisville Metro website.
  - A phone application can be made so citizens can access the scores on the go.
  - A survey may be a good way to determine how the citizens may prefer to have access to the scores.

- **Requiring one individual at the pool/spa to be a Certified Pool Operator (CPO).**
  - This would ensure that someone at the establishment has had training in how to operate a pool.
  - In a study in Nebraska it was found that pools with CPOs had fewer violations than those without.
Conclusion

- Scores from pool and spa inspections should be made available to the public.
- Also LMPHW may want to look into implementing a Certified Pool Operator course to help reduce the number of violations that occur at local pools.
- Overall the practicum experience provided me with an understand and practice into the daily activities of environmental health officials.
Acknowledgements

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- Others
  - Fellow student Lindsey Joyce
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Any Questions/Comments?
Sources