COUNTY OF LOS ANGELES
DEPARTMENT OF PARKS AND RECREATION
"Creating Community Through People, Parks and Programs"
Russ Guiney, Director

August 24, 2010

TO: Each Supervisor

FROM: Russ Guiney
Director of Parks and Recreation

Jonathan E. Fielding, M.D., M.P.H.
Director and Health Officer, Department of Public Health

SUBJECT: **REPORT ON REVIEW OF INCIDENT AT ARCADIA COUNTY PARK SWIMMING POOL ON JULY 19, 2010**

This letter is in response to the July 20, 2010 Board Motion instructing the Director of Parks and Recreation (DPR), in consultation with the Director of the Department of Public Health (DPH); to 1) Conduct a review of the July 19, 2010 incident at Arcadia County Park public swimming pool (Norman S. Johnson Pool) to identify contributing factors and appropriate corrective and preventive measures; 2) Review of the procedures for chlorination at all County pools and identify the need for any changes or improvements and; 3) Report back to the Board within 30 days, along with any recommended actions to prevent similar incidents in the future. This report is in response to that motion. The actions outlined below will ensure the continued safe operation of all Los Angeles County pools.

1. Conduct a review of the July 19, 2010 incident at Arcadia County Park public swimming pool to identify contributing factors and appropriate corrective and preventive measures.

On Monday, July 19, 2010 at 11:21 a.m., an incident occurred at Arcadia County Park public swimming pool (Norman S. Johnson pool) which resulted in a large amount of chlorine being released into the water. Pool lifeguards immediately enacted emergency evacuation protocols including the evacuation of pool patrons, showering patrons to remove chlorine and administering oxygen. Arcadia Fire Department responded, set up triage, Incident Command and hazardous materials response procedures. Thirty four swimmers were evacuated from the pool and seventeen of the swimmers, all children, were transported to local hospitals. Fourteen of the children were released to their parents the same day and the remaining three children were released the following day. Hazardous Materials Teams confirmed that no chlorine gas was released into the structure.

DPH conducted an investigation into the incident and determined than an accumulation of air in the chemical circulation line may have temporarily blocked normal chlorine release. On the morning of July 19th, prior to the pool opening to the public, lifeguard staff conducted their required chemical measurements which indicated no chlorine in the pool. In an attempt to correct this issue, staff primed the chemical pump. Additional chemical readings indicated that the chlorine was not reaching the pool. When lifeguard staff primed the pump again, it appears the air bubble may have pushed out of the line allowing 10-20 gallons of liquid chlorine to be discharged into the pool water.

The investigation determined that the chemical hose from the chlorine container was placed in a water vat the previous night but the pump was inadvertently left on by pool staff. The cause was human error.

An investigation conducted by DPR concurred with the DPH findings.

Arcadia County Park public swimming pool was closed on July 19, 2010 and remains closed. It was determined that it was not fiscally prudent to make recommended repairs to reopen the pool for the short time remaining in this years' pool season as the pool is scheduled to be demolished and will be completely rebuilt.

CORRECTIVE AND PREVENTIVE ACTIONS

Recommendation #1: Continue to train DPR key staff in the use and maintenance of all recirculation equipment.

Corrective Action: DPR conducted a comprehensive review of all training materials related to the operation of Arcadia County Park public swimming pool chlorination, recirculation system and emergency procedures. All pool staff including pool lifeguards, pool managers, Aquatics Manager, and plumbing staff were retrained on proper use of the pool's recirculation equipment, chlorination system and emergency procedures. Retraining was also conducted on the completion and reporting process of incidents and the record keeping of chemical log sheets.

Recommendation #2: Continue to retrain all staff to notify a supervisor of the Aquatics Section or the Facility Craft's Manager when a problem with the swimming pool recirculation equipment is encountered.

Corrective Action: All pool staff including pool lifeguards, pool managers and the Aquatics Manager were retrained on the updated materials regarding the pool's chlorination system, emergency procedures and notification protocols.

Recommendation #3: Identify and replace any recirculation and/or chlorination equipment that is not functioning properly.

Corrective Action: DPR performed pool pump repair on a bearing and seals and replaced one injector. A construction project is underway at Arcadia Park which includes the replacement of the pool and the bath house and all recirculation/disinfection equipment. The project, which was initiated in March 2010, is in the planning stages.

Recommendation #4: Electrically interconnect recirculation pump and chlorination pumps and pool disinfection pumps (both chlorinators and acid feeding pumps) so that if one pump fails, all systems will shut off.

Corrective Action: The project scope for the new pool includes an automated system which electrically interconnects recirculation pump and swimming pool disinfection pumps. This will insure an automatic system shut down if one of the pumps fail.

Recommendation #5: Continue to maintain incident and/or chemical log sheets to record system malfunctions and problem frequency.

Corrective Action: DPR has and will continue to maintain daily chemical log sheets and incident reporting logs.

In addition to the investigation and reviews conducted by DPR and DPH, the Los Angeles County Department of Agricultural Commissioner/Weights and Measures (ACWM) also conducted a separate investigation. Specifically, ACWM's investigation resulted in several violations regarding the use of chlorine, a registered pesticide. The violations as well as the corrective actions implemented by DPR, are outlined below.

Violation #1: Copy of pesticide label (chlorine) not available at the use site.

Requirement: A copy of a complete product label must be available at all use sites. The pesticide label includes the label on the container and all supplementary labeling on or attached to the container or provided separately by the pesticide registrant. Among other restrictions and precautions, the label verifies EPA approval, informs of proper medical treatment for poisoning, and provides specific instructions for correct application and use.

Corrective Action: DPR immediately placed a copy of the pesticide label (chlorine) in a highly visible location above the chlorine container in the recirculation equipment area.

Violation #2: Introduction of chlorine to pool without use of accurate measuring device.

Requirement: Any device used to measure chlorine must be calibrated and graduated to measure in increments no greater than 1/8 gallon (16 fluid ounces).

Corrective Action: The calibrated measuring device is part of the project scope for the new pool.

Violation #3: Pest control not performed in a careful and effective manner utilizing equipment and methods suitable to insure proper application of pesticides (chlorine).

Recommendation: During introduction/dispensing/application of chemicals, an individual must be present at all times to monitor application process, prepared to immediately cease operation of the pump once dispensing is complete or in the event of an emergency.

Corrective Action: This will be implemented at Arcadia County Park public swimming pool when the pool reopens after construction.

Recommendation: Each injection line should have installed, operable in-line check valves to prevent backflow into bulk tank in case of pump failure or power outage (causing overflow of tank).

Corrective Action: This equipment is scheduled for implementation as a part of the new pool construction project.

2. Review of the procedures for chlorination at all County pools and identify the need for any changes or improvements.

DPH conducted inspections of all 27 Los Angeles County public swimming pools between July 22, 2010 and July 28, 2010. The following recommendations were made to prevent incidents similar to the incident at Arcadia County Park public swimming pool and all County swimming pools.

DPH Recommendations:

1. At each of the Los Angeles County pools, it is recommended that there be at least one permanent staff member who is a Certified Pool Operator (CPO) or equivalent on staff. CPO training includes proper disinfection methods, risks associated with chemical disinfectants, a review of recirculation and chlorination equipment and how to recognize equipment malfunctions which may pose potential risks to swimmers.

Corrective Action: DPR will discuss the recommendation to utilize only permanent staff as a CPO and/or Aquatics Facilities Operator (AFO) with the Chief Executive Officer (CEO). An AFO is the state certified equivalent of a CPO.

As of June 1, 2010, DPR had eight (8) CPO's and five (5) AFO's certified. As recommended by DPH, by April 1, 2011, an additional 22 employees (permanent and recurrent) will have completed the CPO certification training to satisfy the DPH recommendation. The estimated cost for CPO certification is $200/per person.

ACWM provided Pesticide Handler Training on August 18, 2010 for 33 DPR staff. Sixty (60) pool staff will be certified by October 15, 2010. The estimated cost for ACWM Pesticide Handler Training is $500 per class.

The estimated cost for the recommendations listed by DPH for the CPO and by ACWM for the Pesticide Handler Training for all 27 pools is $4,900.

2. Make readily available to all swimming pool staff members an emergency repair contact list posted in a highly visible area and ensure that all staff is aware of the location.

Corrective Action: In addition to the wallet-size emergency contact information which DPR provides to all pool and plumbing staff annually, the department has posted Emergency Contact Information Signage in the pool manager's office and the pool chemical room as recommended by DPH. This information will assist pool staff in proper notification to superiors when a problem occurs with the pool's recirculation and disinfection pumps and system.

3. Provide automatic chemical metering systems to monitor swimming pool disinfection for all swimming pools that do not already have systems in place.

Corrective Action: DPR has evaluated all County pools regarding installation of automatic chemical metering systems. DPR will discuss with the CEO, funding needs for the chemical metering systems per DPH's recommendation. Eighteen of DPR's 27 pools have automatic systems. To implement DPH's recommendations, DPR needs to replace manual systems at the following 9 pools: Belvedere Park pool (SD1); Obregon Park pool (SD1); Athens Park pool (SD2); Washington Park pool (SD2); Victoria Park pool (SD2); Cerritos Park shallow pool (SD4); George Lane Park pool (SD5); Val Verde Park pool (SD5); Knollwood Park pool (SD5). The estimated cost for these automated metering systems is $33,000 per pool for a total of $297,000. Automation of these systems requires approximately 15 days per pool to complete.

4. Store all chemical metering pumps that are exposed to the outside elements, indoor during the months of non-operation.

Corrective Action: DPR is investigating storage areas for chemical metering pumps during the months of non-operation. Evaluation will be completed by September 1, 2010 and the pumps will be secured by October 15, 2010.

5. Conduct a meeting between DPR and DPH each year prior to the opening of the swim season.

Corrective Action: DPR will conduct a meeting with DPH to review and insure that pool standards and public health safety standards are met prior to the opening of each summer season.

3. Report back to the Board within 30 days along with any recommended actions to prevent similar incidents in the future.

In addition to the recommendations and corrective actions identified above, DPR has or is in the process of implementing the following actions:

- Meetings have been held with all pool and plumbing staff to discuss the findings of the investigation into the Arcadia County Park swimming pool incident to ensure this does not occur at other pools.

- A Daily Checklist has been implemented at all County swimming pools which requires staff to systematically go through all opening and closing protocols to ensure that chemical and recirculation systems are operating properly.

- DPR will have an individual present at all times during the operation of the pool to monitor the application process for the 9 pools with manual systems. This employee will be prepared to immediately cease operation of the pump once dispensing is complete or in the event of an emergency.

- DPR has placed a copy of the pesticide label (chlorine) on or near the chlorine container at all County swimming pools in an area within the recirculation system (chlorine) as recommended by ACWM.

- Pesticide Handler Training will be conducted annually for all pool staff.

- Ongoing trainings conducted by the Department's Aquatics Managers will continue on a monthly basis for all staff at each County pool.

- Continue to maintain regular maintenance schedules for all pool chemical pumps.

DPR is committed to ensuring safe facilities for the public. DPR has taken the actions identified in this report to ensure that similar incidents do not reoccur. In addition, the recommended automation of the pool chemical and recirculation equipment will strengthen safety measures.

If you have any questions regarding this report or the proposed recommendations, please feel free to contact Russ Guiney, Parks and Recreation Director at (213) 738-2951 or your staff may contact Frank Gonzales, Parks and Recreation Deputy Director at (626) 369-8694.

RG:FG:dt

c: Board of Supervisors, Executive Office
Chief Executive Office
County Counsel