

### *Hazard Review*

- **Asphyxiation**
- **Aspiration**
- **Chemical**
- **Electrical**
- **Fall**
- **Lifting**
- **Slip**

### *Related Safe Work Practices*

- **Electrical Safety, General**
- **Hazardous Substances**
- **Housekeeping**
- **Lifting, Body Mechanics and Ergonomics**
- **Personal Protective Equipment**

### *Personal Protective Equipment*

- **See MSDS**

### *Authority*

- **California Code of Regulations,**
- **Title 8, Sections 2569, 5141, 5143, 5162-3**
- **Title 16, Section 832**
- **Title 22, Section 65501**
- **California Building Code, Title 24, Sections 3101-3162**
- **Health and Safety Code, Sections 116025-116068**

Prepared by: Recreation SWP Working Group, H. Stoermer, D. Kelm

Approval by: J. Bramlett, EHS Program Manager  
Staff Safety Advisory Committee  
B. Palacio, Superintendent of Recreation and Community Services  
A. Alvarez, Superintendent of Parks and Open Spaces  
S. Flannery, Superintendent of Structural Maintenance  
K. Gee, Director of Human Resources  
K. Petrucione, Director of Finance and Administration  
P. Ginsburg, General Manager

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This safe work practice addresses hazards of different types of aquatic operations and is organized into the following areas:

- A. Chemical
- B. Electrical
- C. Lifting

This SWP is dedicated to helping you avoid an injury or illness from known hazards. We advise you to follow these recommendations.

The known hazard and potential injury or illness related to performing aquatic operations based on RPD injury and illness data include:<sup>1,2</sup>

<b>Known Hazard</b>	<b>Potential Injury, Illness</b>
Asphyxiation	(Dry) Drowning due to laryngospasm, suffocation, death
Aspiration	(Wet) Drowning, suffocation, death
Chemical	Suffocation, irritation, burns, death
Electrical	Burn, cardiac arrest, death
Fall	Traumatic brain injury, fracture, death
Lifting	Back strain, cumulative trauma
Slip	Bruise, contusion, sprain, strain, fracture from fall and impact

All tasks require that you complete required training. This includes:

- A review of any manufacturer's operating manuals
- Review of the material safety data sheets (MSDS) for each chemical
- Training on this SWP and those listed above as related. Training on SWPs must be completed before initial assignment and every 2 years thereafter

You are advised to read and follow this SWP and any related SWPs. Obtain advice from a Qualified Person if you have any questions.

A Qualified Person is a person designated by the employer; and by reason of training, experience, or instruction who has demonstrated the ability to perform safely all assigned duties; and, when required is properly licensed in accordance with federal, state, or local laws and regulations.<sup>3</sup>

## A. POOL CHEMICALS

During 2002-2008 over 28,000 illness or injury cases were associated with pool chemicals. The most common contributing factors included:<sup>4</sup>

<sup>1</sup> Data based on RPD injury and illness database information obtained from September 5, 2007 to September 5, 2012 for RPD pool incidents.

<sup>2</sup> Centers for Disease Control and Prevention. Pool Chemical-Associated Health Events in Public and Residential Settings — United States, 1983–2007 MMWR 2009; 58(18):489–93. Available at <http://www.cdc.gov>.

<sup>3</sup> Qualified Person definition obtained from "Safety and Health Training and Instruction Requirements". Retrieved September 11, 2012 from <http://www.dir.ca.gov>.

<sup>4</sup> CDC. Acute Illness and Injury from Swimming Pool Disinfectants and Other Chemicals---United States, 2002-2008, MMWR 2011; 60(39):1343-1347.

- Mixing incompatible products
- Spills and or splashes of chemicals
- Lack of appropriate personal protective equipment (PPE) use
- Dust clouds and or fumes generated by opening a chemical container

The need for chemical disinfection to control waterborne disease outbreaks must be balanced with reducing the number of injuries associated with the use of these same chemicals.<sup>5</sup>

## I. Cleaning, Testing, and Maintenance

### Before

1. Review and follow the information provided on the manufacturer's Material Safety Data Sheet (MSDS) and the label for each of the products and chemicals you are using (see the *Hazardous Substances SWP*).
  - If you don't have an MSDS, get one before you proceed
  - If the label is unreadable, obtain and affix a new label to the container before you proceed
2. Ensure you have the proper tools, training, and specific PPE to conduct the job safely (see the *Personal Protective Equipment SWP*).
3. Store all chemicals in accordance with the guidelines provided by the MSDS and store cleaning and testing equipment (brushes, sweeps, skimmers, etc.) in a neat and secure manner.
4. Inspect cleaning equipment before use for integrity and safety. Immediately take any faulty or damaged equipment out of service.

### During

5. Use kneepads or a pool kickboard to protect your knees from hard surface pressure while cleaning surfaces.
6. Use proper body mechanics while cleaning surfaces (see the *Lifting, Body Mechanics, and Ergonomics SWP*).

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<sup>5</sup> Centers for Disease Control and Prevention. Pool Chemical–Associated Health Events in Public and Residential Settings — United States, 1983–2007 MMWR 2009; 58(18):489–93. Available at <http://www.cdc.gov>.

- Apply just enough pressure to remove dirt and scum so that you do not cause injury to yourself
  - Lift pool brushes, skimmers, and other awkward equipment with proper lifting techniques. Get assistance from another staff member to help lift awkward or heavy equipment.
  - *Remember WATER IS HEAVY!!* One gallon of water weighs over 8 pounds! Consider the weight of the water you will push, pull or lift in dealing with pool equipment.
  - *Avoid twisting, turning, or jerking movements.* Move slow and methodically.
7. Ensure proper ventilation is in place for material being used.
- If mechanical ventilation is absent or not adequate, find other means to safely bring in and circulate fresh air.
  - Review the MSDS for ventilation requirements of the chemicals you are using.

## **After**

8. Ensure that all chemicals are thoroughly rinsed from surfaces. Residue can be slippery and irritating to the skin.
9. Return all equipment and chemicals to their safe, proper, and secure storage locations.
10. Report any pool maintenance problems, faulty and or damaged equipment and or facilities to your supervisor. Follow-up and follow-through on work order requests.

## **II. Delivery of Sodium Hypochlorite**

### **Before**

11. The Stationary Engineers shall complete training on the use of spill kits, eyewash stations, and deluge showers. Completion shall be documented on the department's Training Documentation Form.
12. The Stationary Engineers will work with the chemical delivery vendor to schedule delivery of the sodium hypochlorite.
13. The Stationary Engineers shall ensure that the unique tank fittings are properly installed and operational prior to each delivery.

14. The Stationary Engineers shall ensure all transfer connections are secure before filling the tank.
15. Just prior to filling, the Stationary Engineers will check the tank level; if the tank is not empty, the door to the tank room shall be left open and a floor fan to provide adequate ventilation will be operational during the tank fill.

## After

16. Stationary Engineers shall verify that the chemical delivery vendor has completed the delivery, that no spills have occurred, and will turn off the fan.
17. Any spills shall be cleaned up immediately (see the *Hazardous Substances SWP*).

## B. ELECTRICAL SAFETY

### Before

18. Review the Electrical Safety SWP.
19. Ensure all electrical outlets which are in wet areas are equipped with Ground Fault Circuit Interrupters (GFCI). Note: Outlets which are linked upstream from a main GFCI unit may not visually appear to be GFCI, but labeling or manual testing should confirm they are. If they are not, or you are not sure, contact the Electrical Shop.
20. Inspect all electrical cords and connections of the pool vacuum system and all other electrical equipment and portable appliances (i.e., radios, PA systems, film projectors, etc.) in the pool area before each use to assure they are not damaged.
  - This includes equipment brought from outside parties and or instructors using the pool facilities.
  - All damaged or faulty equipment needs to be immediately removed from service.
21. Have all staff who operate the pool vacuum systems review and understand the manufacturer's guidelines and have the operations manual posted or readily accessible for reference.

## During

22. Place electrical cords and equipment in locations that eliminate or minimize tripping hazards.
  - Use cones or markers as necessary to warn others of a cord's location.
  - Locate equipment away from splash zones and preferably raise it off the ground to prevent contact with wet surfaces.
23. Protect electrical cords and equipment from physical and environmental damage.

## After

24. Turn off all equipment and then disconnect power cords. Never unplug a piece of equipment by pulling on the cord. Disconnect the plug from the receptacle by grasping and pulling on the plug.
25. Inspect all equipment prior to returning it to appropriate, orderly, and secure storage.

## C. MECHANICAL LIFTING DEVICES

### Before

26. Ensure a copy of the manufacturer's operation guide for the pool's lifting device is available at each pool location and is readily accessible.
27. Ensure staff using the lifting device have read the manufacturer's operating guide prior to use.
28. Lifting equipment inspection and maintenance:
  - Inspect lifting equipment before each use for integrity and proper function.
  - Ensure chair lift cylinders, tube ends, and other potential sharp ends are covered per manufacturer requirements.
  - The weight capacity limit should be clearly marked and visible on the equipment.
  - Ensure the lift will not exceed the marked capacity.
  - Periodically perform a lift test, particularly in instances where use is

infrequent, to ensure equipment functions properly under load. Ask another staff member to assist by sitting on the lift or use a weight in the chair to provide a test load.

- Ensure completion of and document any specialized maintenance activities recommended and or required by the manufacturer for proper function and longevity of the equipment.
- Immediately take any faulty or suspect equipment out of service and notify your supervisor.

## During

29. Use proper body mechanics and procedures while operating the lift to assist patrons and swimmers.

- Move or lift the device or its parts with proper lifting techniques (see *Lifting, Body Mechanics and Ergonomics SWP*). Get assistance from another staff member to help lift awkward or heavy equipment.
- Avoid twisting, turning, or jerking movements.

## References

CDC. Acute Illness and Injury from Swimming Pool Disinfectants and Other Chemicals---United States, 2002-2008, MMWR 2011: 60(39):1343-1347.

CFR 29 1910.120- Hazardous Waste Operations and Emergency Response.

Cal/OSHA Says Changes Needed In Wake Of Wave-Pool Death. Cal-OSHA Reporter Newsletter: April 18, 2008.

Centers for Disease Control and Prevention. Pool Chemical–Associated Health Events in Public and Residential Settings — United States, 1983–2007 MMWR 2009; 58(18):489–93. Available at <http://www.cdc.gov>.

Qualified Person definition obtained from “Safety and Health Training and Instruction Requirements”. Retrieved September 11, 2012 from <http://www.dir.ca.gov>.

Centers for Disease Control and Prevention. Pool Chemical–Drowning- United States, 2005–2009 MMWR 2012; 61(19):344-47. Available at <http://www.cdc.gov>.

“Transporting Hazardous Materials”. Retrieved May 8, 2009 from <http://www.osha.gov>.