

**Safety Tip of the Month – May 2007**  
**VSI Safety Committee**  
**“Take a Deep Breath!”**

As Nancy completes her 200Y Individual Medley event, you notice her gasping for breath as she crawls out on the edge of the pool. Her lips have a blue tinge. Her eyes are closed, and she is grimacing as she fumbles in her swim bag to locate her inhaler. Nancy is having a bad day with her asthma.

What is asthma? This serious respiratory condition involves disease of the airways and lungs, with the hallmarks of variable lung airflow, airway hyper-responsiveness, and airway inflammation. Airway spasms shrink the airway overall lumen and results in decreased air exchange. We know that asthma may be induced by exercise, environmental allergens, pollutants, airway irritants, and infections of the upper respiratory tract.

Signs and symptoms of asthma include:

- Chest tightness or pain
- Poorer performance than training would predict
- Wheezing or cough
- Increased fatigue
- Stomach ache
- Sore throat with exercise
- Decreased exercise with fall in endurance
- Inability to keep up with peers of similar skill
- Excessive sputum production with exercise
- Shortness of breath, out of proportion to exercise tolerance

Some basic tests to diagnose asthma include chest X-ray, arterial blood gas, pulmonary function tests, and nuclear medicine studies. Initial treatments include:

- Scheduling regular healthcare provider appointments
- Staying adequately hydrated during all practices and on every day of the meet
- Maintain an adequate daily sodium intake
- Practice with and demonstrate incentive spirometry and other airway maneuvers
- Use one or more inhalers to maintain bronchodilation. Use spacers, as available, to improve the efficacy and distribution of the bronchodilator medication. Swimmers should take their short acting bronchodilator medications no earlier than 30 minutes prior to the workout or event. Most pre-exercise medications last for several hours, but do not have an onset of action for 30 minutes.

Asthmatic swimmers should avoid over the counter inhalers. The risk of toxicity with such combinations of prescribed inhalers and supplemental over the counter inhalers has caused many physicians to discourage these over the counter preparations. Furthermore, some of the over the counter inhalers have unproven benefits, may encourage a dependence on the preparation, and some may contain stimulants that will unduly stress the heart rate. Pool chemicals such as chlorine or bromine can significantly impact breathing. Atmospheric compounds such as carbon dioxide and chloramines may detract from performance and could trigger an asthmatic attack. Trichloramine is another aquatic compound that is formed within the natatorium venue, and will cause major respiratory conditions in the swimmers exposed to this compound. Aquatic Facility managers should measure and record the pool water pH and chlorine at least twice per day. Also, the manager should make sure that the ventilation system is working properly within the pool / locker room setting.

Rescue inhalers should be close to the end of the pools for each asthmatic swimmer. The “maintenance” or preventative inhalers may be in the locker room, but should also be close by. Asthma medications permitted by the World Anti-Doping Agency for swimmers in major national / international competitions include: Accolate, Aminophylline, Atrovent, Cromolyn, Intal, Ipratropium, Nedocomil, Singulair, Theophylline, Tilade, and Zflo. If you see the asthmatic swimmer in distress, remind them to take one to two puffs from their rescue inhaler. If the respiratory distress continues, despite a second puff in 10 minutes, the rescue squad should be called and the swimmer taken to the nearest medical facility for administration of bronchodilators, steroids to minimize air swelling, oxygen, and gentle hydration.

Remember that aquatic sports actually benefit asthmatics, since oxygenated blood distributes better throughout the body when the individual is horizontal during exercise. Humidity also facilitates air movement in asthmatics, and the swimmer’s exercise builds up the swimmer’s cardiovascular and pulmonary endurance over time. With attention to the above guidelines, we are more likely able to keep our asthmatic swimmers in the water, and let them enjoy the many positive aspects of swimming.