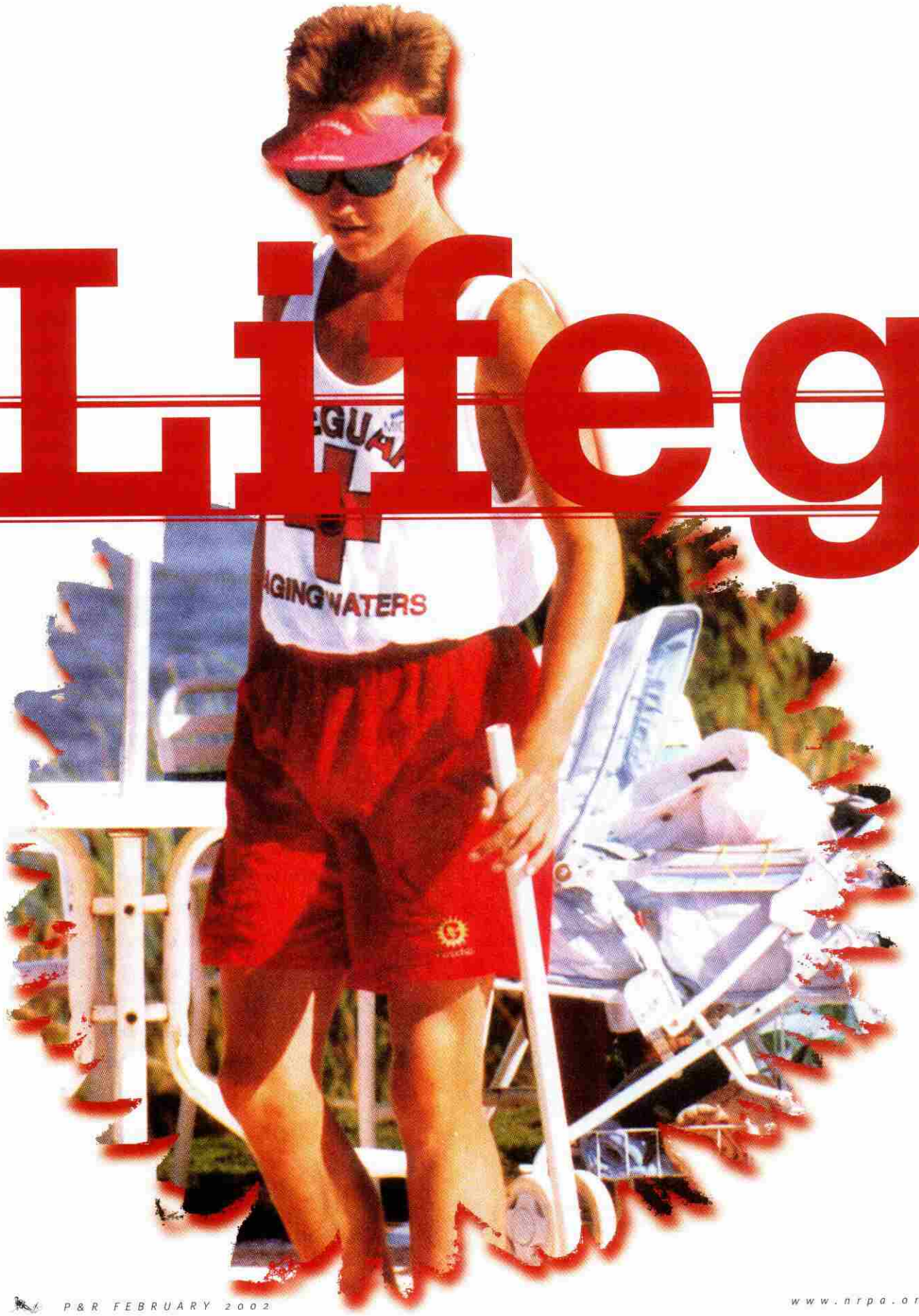
# Lifeg



# Study Shows Guards Can't See Everything, Always

## Data from Vigilance Institute Points to Environmental, Job-Related Reasons Contributing to Results

"Every second counts in a drowning incident. The longer a victim is submerged, the greater the chance of permanent brain damage or death," said Jeff Ellis, president of Jeff Ellis and Associates. "We developed the '10:20' rule, which says that if a lifeguard can spot a swimmer in distress within the first ten seconds of a drowning incident, and reach him to initiate aid within an additional twenty seconds, that it remains highly unlikely a drowning accident would occur. These dramatic results show that drowning, or near-drowning accidents with potentially serious, negative life-long consequences, would have occurred in the majority of the test cases."

Commissioned by Poseidon Technologies, the studies were designed to measure actual lifeguard performance in detecting drowning incidents and to identify the factors that influence lifeguard vigilance. The results point to causes that may be contributing to the more than 400 deaths occurring annually in public, lifeguarded swimming facilities in the United States.

The first study, conducted by Jeff Ellis & Associates, calculated how quickly lifeguards could spot a swimmer in trouble underwater. Approximately 500 tests were performed onsite during the months of June, July and August at more than 90 U.S. pools that had no prior knowledge of the study, and that differed in size and type. In each case, a manikin was placed underwater in the pool; a tester started the clock when it was fully submerged.

Results showed that on average, it took one minute and 14 seconds for lifeguards to spot the manikin. Lifeguards noted the presence of the manikin on only 46 occasions, or in 9% of the tests within 10 seconds, and in 30 seconds or less in 43% of the tests. In 41% of the tests it took over one minute; it took more than three minutes in 14% of the tests.

Ellis added that videotapes of the tests show the lifeguards were using standard scanning techniques to guard the pool. "They clearly look, but do not see."

The reason lifeguards cannot always see what happens in the pool is often the result of environmental factors working against them, including noise and heat, as well as long hours on the job and the monotonous nature of their task. Some of these factors have been summarized in a survey of studies entitled "Bibliographic Study on Lifeguard Vigilance," which was completed in September by vigilance experts at the Applied Anthropology Institute in

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Paris, France. The institute is renowned worldwide for its work with major airline and car manufacturers, including Airbus.

This latest review supplements existing vigilance studies on lifeguards at sea. It details results of tests on highway drivers, airline pilots and industrial operators, and uses them to draw implications and recommendations for pool lifeguard vigilance. These include:

- Vigilance capacity cannot be maintained at an optimum level for more than 30 minutes. The detection of critical signals (signs of a swimmer in trouble) in this type of task is never 100%.
- Laboratory studies show that the vigilance level will be higher as the number of relevant signals increases and the amount of non-relevant signals (signals other than a swimmer in trouble) decreases. However, drowning incidents with their associated signals are rare, and they occur only randomly. The signal-noise ratio is thus very unfavorable to maintaining vigilance.
- Noise, one of the major environmental factors at a pool, generally has an unfavorable effect on lifeguard vigilance. Moreover, noise hinders the ability to share one's attention and tends to focus one's attention on the signals present in the central vision, to the detriment of those signals present in the peripheral vision.
- The performance of lifeguards can be affected by monotony, stress and fatigue. The particular environment in which the job is performed heightens the fragile nature of the performance.
- Heat is one of the factors that has a major effect on vigilance. Given the seasonal aspect of lifeguarding activities, lifeguards are often exposed to heat and to conditions that are not conducive to their performance. When the temperature is over 30°C / 86°F, vigilance is significantly reduced — by 45 percent.
- Performance can be maintained by alternating activities. Lifeguards should perform different activities (for example: vigilance, lessons, maintenance operations) rather than just continuously lifeguarding the pool.
- Breaks have a very positive effect on the vigilance level. For optimum benefit, the frequency and duration of breaks must take into account the time of day: they must be more frequent and shorter when the alertness level is low, for example in the early afternoon.

The institute concluded "the maintaining of lifeguard vigilance at a high and constant level throughout the surveillance period is particularly difficult due to the nature of the task: the low number of critical signals and high number of non-critical signals, the monotony, the unfavorable physical conditions (noise, temperature, etc.), and the organization of the activity over time, which may not be ideal."

It added that "in this context, automatic systems that help detect drowning accidents such as Poseidon provide essential assistance and are a determining factor in improving safety. For such systems, it is important to take into account and to optimize the functioning of the human/system team in order to maximize the overall performance." ■