

**QUESTIONS ASKED BY HOUSE SUBCOMMITTEE ON COAST GUARD &
MARITIME TRANSPORTATION FEB. 1998
ANSWERED BY COAST GUARD JUL 1998**

DEFINITION OF "COLD" WATER

Question: Regulations promulgated by the Coast Guard Marine Safety Program define "cold water" to mean water where the monthly mean low temperature is normally 59°F (15°C) or less. (See 46 CFR 28.50, 46 CFR 117.200, and Navigation and Inspection Circular (NVIC) 7-91). Please provide the Committee with the justification and all supporting documentation for using 59°F (15°C) to define "cold" water.

Answer: "Cold water" is a relative term. Even in temperate or moderately warm water, hypothermia (the lowering of body core temperature) will occur if a person is in the water long enough. Water conducts heat away from the body 25 times faster than air, this loss of heat can overwhelm the capacity of body metabolism to generate enough internal heat.

The Coast Guard had to define cold water in 1983, when it proposed regulations requiring exposure suits on cargo ships (48 CFR 4837, February 3, 1983). Ships operating in warm waters would be exempted from the requirement. A temperature of 60°F (15.5°C) was selected because "a person of average body build, in good health, wearing work clothes and a life preserver could be expected to survive about eight hours." This was based on hypothermia research available at that time, much of it done under funding provided by the Great Lakes Extended Season Navigation Demonstration Program in the 1970s.

Following the 1983 sinking of the MARINE ELECTRIC off the Virginia Capes with the loss of 31 of 34 crew members, the Coast Guard Authorization Act of 1984 (Public Law 98-557) directed the Coast Guard to submit a report to Congress on the warm water exemption and the latitudes at which it applied. In developing the report, the Coast Guard investigated the validity of the 60°F criterion by examining casualties which had occurred in water temperatures between 50°F (10°C) and 70°F (21°C). Based on the results, the Coast Guard concluded that 60°F water was "safe" for an unprotected person for about two hours, and that the 50 percent survival rate was estimated to be at least 4.5 hours (i.e. after 4.5 hours, 50% of the unprotected initial survivors would have perished). For vessels that carried lifeboats or liferafts, 60°F was considered safe since survivors of a casualty would have at least two hours, and possibly longer to make their way to a lifeboat or liferaft. The report titled, "Exposure Suits on Certain Inspected Vessels" was originally submitted in 1985, an additional copy was forwarded to the subcommittee on April 3, 1998.

A 1991 Coast Guard study of small passenger vessel casualties also investigated the role of water temperature on survival time. The study concluded that lifejackets, life floats, and buoyant apparatus had proven adequate (i.e. provided adequate water immersion survival rates) in all studied casualties where water temperature was 60° F or more. This study was also forwarded to the subcommittee on April 3, 1998.