

INSULATED CLOTHING AND TEMPERATURE SCANNER PREVENT COLD STRESS AT NAVAL AIR STATION SIGONELLA, ITALY

The food service galley at the U. S. Naval Air Station Sigonella, Italy (NASSIG) prepares and serves meals to over 1,000 U. S. sailors, U.S. civilians, and Italian nationals. The galley is part of NAS Sigonella's Supply Department, which is a leader in implementing innovative ideas and approaches to protecting the Navy's workforce.



Stocking cold storage area at NASSIG Galley

Food service workers in the NASSIG galley are frequently assigned to work in the cold storage rooms where meat, fish, dairy products, vegetables, fruit and other perishable foods are kept cold between meals; and in the walk-in freezer where frozen foods are stored at 0° F.

People who work in cold environments are at risk for *cold stress*, also known as *hypothermia*. Hypothermia means, literally, *low heat*. It refers to the health hazard of dangerously low internal body temperature. Hypothermia occurs when too much body heat is lost, and the body's internal temperature control mechanisms cannot adequately

re-warm the body. External temperatures do not have to be below freezing for hypothermia to occur; it has been known to occur at temperatures as high as 50° F.

The individual is at risk for hypothermia when he or she starts feeling uncomfortably cold and begins shivering. Hands and feet become especially uncomfortable as falling body temperature decreases blood flow to the hands and fingers, joints stiffen, and sense of feeling decreases, diminishing manual dexterity and making walking difficult.

Researchers with the 3M Corporation, the Center for Disease Control's (CDC) Morbidity and Mortality Weekly Report, and Princeton University's Wilderness Program have documented that certain fabrics may actually

increase the rate of bodily heat loss, especially when used for gloves and footwear. Tightly fitting gloves, footwear, or other clothing, such as tight fitting pants, may restrict air exchange or blood flow, interfering with the body's ability to stay warm. Poorly fitting gloves, clothing, socks, or boots that expose skin surface or allow the skin to become cold, may also contribute to cold stress. Thin cotton gloves, for example, can speed up heat loss from the fingers.



MS1 Lillian Rameriz displays one of new insulated gloves worn for work in cold storage and freezer areas

lose significant body heat through the feet. Workers standing on cold surfaces have been shown to experience their lowest skin temperature on their feet.

Wearing adequately insulated, properly fitted clothing, gloves, and footwear is the primary defense against cold stress. Insulation capacity depends on the type of material used and how it is worn. Several loose layers of warm clothing insulate better than one tight layer; the air spaces between the body and the layers of clothing help hold in body heat. Fabrics such as polyester microfiber, cotton, and wool insulate while allowing sweat to evaporate.

It's important to protect the feet, hands, head, and face. They are farthest from the heart, poorly insulated, and difficult to keep warm. In fact, almost half of the body's heat can be lost through the unprotected head. Well-insulated head and neck coverings prevent heat loss from those parts of the body. Insulated gloves or mittens and periodic re-warming keep the hands warm and agile.

Researchers have also observed that a worker standing on a cold concrete or metal floor can



Coveralls with polyester microfiber insulation are sized to fit each worker

In light of the above research findings, clothing worn by NASSIG galley personnel while working in the cold storage and freezer areas was



Hand-held temperature scanner allows galley workers to take temperature readings from outside freezer

recently evaluated by Mess Specialist Senior Chief Petty Officer (MSCS (SW)) Lorin Schehl. He concluded that the cold storage and freezer workers' clothing was not optimal for protection against cold stress. Schehl ordered new cold weather gear that had been designed specifically to protect food service and maintenance workers from the low temperatures in walk-in refrigerators and freezers. The insulated clothing includes coveralls

and gloves, as shown in the photos on the previous page. The gloves are lined with *Thinsulate*,™ a lightweight insulating fabric that protects the hands from cold without hampering hand and finger dexterity.

The polyester microfiber insulated coveralls are sized to fit each individual worker and, according to Mess Specialist Petty Officer First Class (MS1) Lillian Rameriz, "are very comfortable." Galley workers also wear standard issue leather boots and winter weight cotton socks to prevent heat loss through their feet while standing in the walk-in refrigerators and freezers.

Minimizing time spent in cold environments is, of course, the ideal method of avoiding cold stress injuries. Cold storage workers at the NASSIG galley are required to record freezer temperatures periodically to ensure that frozen foods are kept frozen so that they will be safe to eat when defrosted. A worker used to have to enter the walk-in freezer to read the thermometer, which is affixed to an inside freezer wall.



Close up of lightweight, hand-held, digital temperature scanner

MSCS (SW) Schehl researched and located an efficient, up-to-date method for accurately recording freezer temperatures without unnecessary exposures to cold stress conditions. On the MSCS's recommendation, the NASSIG galley purchased a *temperature scanner*. Galley workers now use the lightweight, hand-held, digital temperature scanner to take temperature readings from outside the freezer.

NASSIG Galley cold storage and freezer workers are pleased with their new protective clothing and *temperature scanner*. These innovations in their work area allow them to work comfortably, which has increased productivity while ensuring protection against cold stress injuries.

Point of Contact: Ms. Wanda Walters, Command Ergonomic Program Manager, U. S. Naval Air Station Sigonella, Italy
Commercial Telephone: 011 39 095 86 6267
DSN: (Overseas) 624-6267
Email: waltersw@nassig.sicily.navy.mil