Just the Facts...

Dust and Sand - Individual

GENERAL INFORMATION	Before the PGW of 1991, air sampling data indicated that the levels for particulate matter (small particles) in the Kuwait Theater of Operations were among the highest in the world. These particles come primarily from natural fine clay dust and sand and they are "normal" for the region. Sand and dust storms are common in the Persian Gulf region, but they are worse during the summer when the northwesterly *shamal* winds occur with greater frequency and intensity. Visibility can be reduced to less than 30 meters for extended periods (24 hours or more). The dust and sand are made up of particles of many different sizes. The smallest particles are called "PM_{10}" to scientifically describe their size. These particles can be inhaled into your lungs. There are also larger particles in the dust and sand. Some of these are so large that they fall out of the air and are not inhaled. Particles in between the very small and the very large enter your nose and mouth when breathing and they are trapped at different places in your respiratory tract. Some of these are trapped in your nose and can be seen in the mucous when you blow your nose. Some may come out when you cough. These are methods that the body uses to eliminate inhaled particles. When present in very high air levels, long exposures to inhaled particles that are not removed have been associated with changes in lung function, and damage to lung tissue. However, these types of high levels and long time exposures are usually associated with uncontrolled occupational situations. The breathing of silica (sand)-containing dust in the lungs has been studied in people who live in deserts area of Africa and the Persian Gulf. After many years of exposure, some of these individuals may have dust accumulate in their lungs with no adverse health effects. This is a non-progressive condition called "Desert Lung Syndrome". It is the body's natural response to long-term exposure to these inhaled sand particles. This condition is different from the occupational disease"silicosis".
ROUTINE EXPOSURES IN THE DEPLOYED SETTING	Dust and sand may be naturally blown by the wind, or created by vehicular traffic, aircraft, or other human activities.
PERSONAL PROTECTIVE EQUIPMENT (PPE) and COUNTERMEASURES AVAILABLE FOR DEPLOYED PERSONNEL	Personal actions to avoid exposure and breathing of blowing dust and sand should be taken, if possible. The use of glasses, goggles, and cravats (large kerchief-type cloths) provide general protection from the large abrasive and irritating particles.
EXPOSURE LEVELS HISTORICALLY ENCOUNTERED	High levels of particulate matter were found in Kuwait during an Army study in 1991. These levels were similar to previously reported average background levels for the area. Kuwaiti "PM_{10} "levels of nearly 600 mcg/m^3 are the highest in the world. Average "PM_{10}" concentrations measured by the Army during a nine-month period in 1991 ranged from 265 to over 670 mcg/m^3. This is about 2 to 5 times higher than the 24-hour national ambient air quality standard (NAAQS) of 150 mcg/m^3 for the United States. Three-fourths of the particles were made of clay from natural sources in the region. One-tenth to one-quarter of the particles was from the oil fires that were burning at the time, and other industrial sources. About one-tenth of the particles were from "other sources", including industrial or military operations that resulted in the production of small particles.

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AVAILABLE EXPOSURE DATA	Air sampling conducted after the PGW showed that levels of particulate matter were high and often exceeded the levels considered safe for the protection of the general population. The samples also showed that there was a large amount of small particles that could be inhaled. However, the total amount of sand and soot that US personnel were exposed to was much lower than the amount needed to cause harmful health effects.
SIGNS AND SYMPTOMS OF ACUTE AND CHRONIC EXPOSURE	Sand and dust can make it difficult to see without causing actual injury. They can also irritate the skin and sensitive membranes of the eyes, nose, and throat, and aggravate pre-existing sinus and asthmatic conditions. Typical symptoms reported by US personnel during the 1991 PGW were cold- or flu-like and included cough, runny nose, eye and throat irritation, and shortness of breath. The long-term (chronic) particulate exposures can worsen asthma. Chronic health effects from exposure to the dust and sand are not expected to occur.
REVERSIBILITY OF ACUTE AND CHRONIC EFFECTS	These symptoms are generally short-term and reversible and are due mainly to the particulate matter and not silica content. Based upon PGW information, chronic health effects are not expected.
TREATMENT REQUIRED/AVAILABLE FOR EXPOSURE	Sand should be rinsed out of the eye with water until removed. Care must be taken to avoid rubbing the eye and scratching the surface of the eyeball. Skin rashes and respiratory complaints should be treated symptomatically as needed.
LONG TERM MEDICAL SURVEILLANCE REQUIREMENTS OF HEALTH EFFECTS MONITORING	Medical surveillance for long-term health effects is not necessary.
SPECIAL RISK COMMUNICATION INFORMATION	Dry air, dust and wind dry out the nose and throat and can cause nosebleeds, coughing, wheezing, and other short-term respiratory problems. However, sand exposure has not been found to be a long-term health risk for veterans of the first Gulf War in 1991. Sand exposure has not been shown to cause chronic lung problems among Western contract employees working in the Persian Gulf. To date, studies of US personnel exposed to dust and sand have not demonstrated any long-term health problems. However, some of the dust that a person inhales is from activities that the individual or others nearby has generated. Under some conditions, this dust may be harmful. Activities and industrial processes that generate dust should be evaluated by Preventive Medicine personnel.